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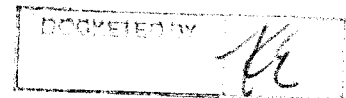
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June 13, 2016

Docket Control  
Arizona Corporation Commission  
1200 West Washington Street  
Phoenix, Arizona 85007

Arizona Corporation Commission  
DOCKETED

JUN 13 2016



RE: Arizona Public Service Company's Comments and Responses in the Matter of the Proposed Rulemaking regarding Interconnection of Distributed Generation Facilities (RE-00000A-07-0609)

Dear Chairman Little and Commission Staff:

Arizona Public Service Company (APS or Company) appreciates the opportunity to provide additional comments regarding questions that were raised at the first technical workshop in this docket. At the close of the workshop, Chairman Little asked the utilities to file comments on refining the scope of proposed draft rules issued by Commission Staff.<sup>1</sup>

The Company's comments on the scope of the rules are noted below, along with the attached redlined document that shows proposed changes to Staff's draft proposed rules for Interconnection of Distributed Generation (Exhibit A). For convenience, also attached as Exhibit B is a clean version of the document. APS looks forward to discussing the substance of these comments as the proceeding in this docket progresses.

#### A. PROVISIONS ESSENTIAL FOR INCLUSION IN THE RULES.

##### 1. The Rules must allow utilities to require lockable Disconnect Switches on distributed generation interconnections.

As stated in APS's previous filing, any proposed rules must allow utilities (at their discretion and in accordance with their safety policies and practices) to require visual lockable disconnect switches on distributed generation (DG) interconnections. APS

<sup>1</sup> Specifically, he asked that the parties categorize topics as either (1) issue essential for inclusion in the rules; (2) issue inappropriate for regulation; or (3) issues that might be addressed in the draft proposed rules (that are not currently included).

recommends that the rules be expanded to include a provision addressing disconnect switches and offers proposed language, which is reflected in Exhibit A. For safety reasons, a visual open and lockable disconnect switch (on the AC side) must be required for proper isolation of the customer's generation from APS's system. Requiring a lockable disconnect switch that can be viewed visually with unrestricted access is critical to the safety of APS's workforce, customers, the general public and emergency personnel.

A circuit breaker is not an acceptable alternative disconnecting device because it is not a visual open disconnect, nor can it be used in a reliable manner to switch or lock out distributed generation. Furthermore, APS would not have exclusive control over a customer-owned and controlled breaker, thus creating risk for APS employees, systems and emergency personnel. Because breakers are not designed to be switching devices, using a breaker as a disconnect switch can cause other problems, such as changing the breaker trip point. These safety hazards exist irrespective of distributed generation system size.

## **2. Alternative approach to the proposed draft rules regarding maximum size of interconnection.**

Determining the maximum interconnection size depends on the unique facts and circumstances of the request. As such, APS proposes categorizing maximum DG interconnection size based on request type: large commercial or industrial interconnections, and residential interconnections. Additionally, the rules should reserve the utility's right to study any individual interconnection request, and to limit the size of interconnections if the technical study results identify potential reliability or safety concerns. The limits on interconnection size are based on three primary factors: (1) feeder or equipment ratings; (2) interconnection size relative to demand; and (3) customer equipment limitations. Because mitigating options and infrastructure upgrades may allow larger systems to interconnect, APS does not support arbitrary size limits.

Large commercial or industrial interconnections on a dedicated 12 kV distribution circuit have a suggested limit of 17 MW. Interconnections of this size are subject to APS's Service Schedule 6,<sup>2</sup> including Feasibility, System Impact and Facilities Studies. The maximum interconnection size may change depending on results of simulations and studies. Large commercial or industrial interconnections that are not connected via a dedicated 12 kV feeder are subject to equipment limitations (*i.e.*, service transformer or service conductor). Again, review of the system may identify infrastructure upgrades that may allow increased interconnection size.

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<sup>2</sup> *Interconnection Study Services and Fees for Non-FERC Generation Facilities*, Arizona Public Service Company, Service Schedule 6, Revision No. 2, A.C.C. No. 5875 (effective July 1, 2012).

Residential DG installations should be limited to 125% of average monthly demand pursuant to A.A.C. R14-2-2302(13)(d). The average monthly demand should be based on the previous 12-month period. In no circumstance should the maximum size exceed the size of the existing service.

**3. Alternative approach to proposed draft rules regarding Screening Test and Study/Fast/Super Fast Track and associated mandatory timeframes.**

APS recommends replacing the Screening requirements, Study Track, Fast Track and Super Fast Track sections in the draft proposed rules with the following system requirements and application processes:

- Residential and commercial/industrial systems less than 1 MW: Among other timelines that are specified in the application process for this size of interconnection, the utility must notify the customer within 60 calendar days of receipt of the application as to whether it is deemed complete or incomplete.
- Systems 1 MW or greater: For an installation this size, an interconnection study may be required, which may take up to 120 days to complete. In the event that the interconnection study requires longer than 120 days, the utility will notify the customer of the estimated time necessary to complete the interconnection study. Importantly, the results of the interconnection study will inform the project specific timeline.

In current practice, APS interconnection timelines vary based on a number of factors, including but not limited to, type of generation, location and size of the system, requirements of the interconnection study, the penetration of the distributed generation on the relevant feeders, the length, and the size and technical characteristics of the feeder. Due to these contributing factors, utilities must have the flexibility to determine when an interconnection study is required, as well as to define the breadth and scope of that interconnection study. Utilities must have the opportunity and time to work with customers to assess these risks and establish plans to mitigate any challenges to reliability and safety. This necessitates an individualized, rather than a formulaic, approach.

The timelines in the draft proposed rules were crafted in an era when the volume of interconnection requests was much lower than it is today. As total penetration of residential, commercial and industrial installations of DG in APS's service territory has increased more than 200% percent in just the past five years, APS requires the time and flexibility to conduct studies and modeling as needed. Today, APS is aware that irrespective of system size and feeder penetration level, interconnecting DG on specific distribution feeders, or at certain spots along a distribution feeder, may impose negative impacts on both lightly loaded feeders as well as saturated feeders. It is essential for utilities to have the flexibility, discretion and necessary time to study the aggregate impacts

of DG, and when necessary, take appropriate steps to mitigate any significant engineering concerns due to the addition of further DG.

Finally, in 2016, the Arizona legislature enacted a solar consumer protection measure, which among other things, addresses the timeframe by which utilities must act on an interconnection application. A.R.S. § 44-1764 was enacted into law on March 21, 2016 and will be effective on August 6, 2016. It requires, in part, that any person who seeks to install, energize or interconnect a Distributed Energy Generation System must first submit a complete application for interconnection to the power grid to the utility that owns or operates the power grid at the point of interconnection. It prohibits the installation, energization or interconnection of the distributed energy generation system until the utility approves the application. However, if the utility does not approve or deny the application within 60 days after the filing date of the application, the distributed energy generation system may be installed. APS's proposed approach aligns with the 60-day provision.

## **B. NEW PROVISIONS RECOMMENDED TO BE ADDRESSED IN THE RULES.**

### **1. The Rules should contain provisions requiring the use of advanced inverters.**

APS strongly supports the proposed rules mandating the use of advanced inverters. Including such provisions will help address the negative impact that DG systems can have to distribution feeders. Widespread deployment of distributed energy resources increases the likelihood of voltage excursions on the grid. This impacts the reliability of other customers, including non-distributed energy resource customers. Requiring advanced inverters enables customers to interconnect and minimize their negative impact to system reliability.

Advanced inverter capabilities are necessary for future interconnected rooftop solar-interfaced DG. This position is broadly shared in the utility industry.<sup>3</sup> Advanced inverters are expected to enhance control and power quality regulation capabilities by providing functionality that helps resolve voltage and thermal issues caused by the increasing penetration of DG. Done properly, this is anticipated to provide another set of tools to system operators to help manage overloads and voltages that exceed limits.

More experience and operating practice will further inform the level of effectiveness the industry can expect from advanced inverters in resolving voltage and thermal issues. As the industry continues to learn how best to use all of the advanced inverter capabilities, valuable lessons have been learned from jurisdictions like Hawaii and Germany that have already mandated the use of a number of the advanced inverters.

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<sup>3</sup> See Western Electric Industry Leaders (WEIL) Group letter to Governors, Commissioners and Legislators, August 7, 2013.

## **2. The Rules should contain provisions addressing Energy Storage.**

The proposed rules should contain provisions to address energy storage systems. APS Interconnection Requirements currently address the interconnection of inverters that convert DC power to AC Power. Energy storage systems (as well as Photovoltaic systems) are considered the DC source input to these inverters. There are two primary areas of focus regarding interconnection of energy storage systems: (1) interconnection; and (2) operation of energy storage devices.

Currently, the interconnection of an energy storage system at distribution voltages (21 kV and less) are processed through the Non-FERC interconnection process as specified in APS Interconnection Requirements. All energy storage units connecting directly to the APS System, and not behind a customer's facility, for the purpose of providing ancillary services and/or capacity support, are subject to the Non-FERC Interconnection Study process irrespective of alternative current output rating. All energy storage units connecting behind the customer's meter for the purposes of peak shaving or to back up customer load are subject to the Non-FERC Interconnection Process.

Operation of widely deployed energy storage devices is an emerging challenge. Energy storage interconnections present unique challenges in the sense that they operate as both a load and a generator. Operating requirements need to be developed, and control and mitigation strategies need to be clearly identified. There exists a risk that energy storage, if not coordinated with larger grid operation strategy, can have a negative impact on congestion and system peak. If properly coordinated, the storage capability may be used to modify load shapes and reduce peak demand. Looking ahead, APS anticipates that qualifying DG systems in concert with advanced inverters have the potential to provide grid support (reactive power, voltage stabilization, capacity planning support), if needed, to support reliability.

## **C. PROVISIONS THAT ARE NOT APPROPRIATE TO BE INCLUDED IN RULES.**

### **1. Provision regarding pre-application mapping and reporting.**

A provision requiring pre-application mapping and reporting is not appropriate to include in the proposed rules. Discussions regarding providing pre-application mapping are premature and replete with challenges, including excessive operational and security concerns. Developing and maintaining time accurate system maps at the feeder level for a customer's use would require extensive and time consuming efforts to aggregate existing data, create models, and continuously update. Many additional resources, including personnel, software programs, and technology upgrades, would be required.

As a point of comparison, Southern California Edison's Distribution Resources Plan reports anticipated costs of enabling technology platforms and applications of \$130M - \$198M through 2017 and an additional \$215M - \$375M through 2020.<sup>4</sup> Some of these same technological platforms are in APS's long range plans, but are still several years away from full integration. In addition, due to the dynamic nature of how APS operates its feeders on a day-to-day basis, there is significant concern regarding the accuracy that any mapping system could achieve and maintain. Importantly, any map of the system may unintentionally identify areas of the grid that could be exploited by adversarial actors. Given these potential costs and concerns, efforts toward pre-application mapping are premature, and APS urges the Commission to determine that such a provision is not appropriate to include in the rules.

**2. Provisions regarding pre-approval of utilities' Interconnection Requirements and annual reporting requirements.**

APS reiterates its comments filed on July 24, 2015, and recommends the rules not require pre-approval of utilities' Manuals by the Commission. The APS Interconnection Requirements (Manual) are highly technical and driven by local and national safety standards to ensure safety and reliability. APS updates and revises its Manual to keep current with technological advancements, market conditions and safety standards. Adding an approval requirement could unintentionally create a barrier to providing timely updates necessary to providing safe and reliable power according to evolving local and national safety standards.

APS also recommends that any necessary DG interconnection reporting requirements be folded into an existing report, rather than creating a new annual Interconnection Report. Such a requirement could prove duplicative and unnecessarily burdensome to utilities and the Commission.

**D. QUESTIONS FROM CHAIRMAN LITTLE AND COMMISSION STAFF.**

Finally, the following questions were posed by Chairman Little and Commission Staff during the technical workshop held on April 13, 2016. For ease, the question is restated and followed by APS's response.

**Q. Who should control the inverter on a DG system?**

The utility bears the ultimate responsibility for delivering safe, reliable power. Advanced inverter functions are envisioned as supplementary tools to help maintain power quality and reliability. The host utility should determine appropriate settings for customer

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<sup>4</sup> *Application of Southern California Edison Co. (U 338-E) for Approval of its Distribution Resources Plan*, Cal.P.U.C. Proceeding A.15-07-002 at Attachment (SCE Distribution Resources Plan) at p. 213 (filed July 1, 2015) <http://www.scpuc.ca.gov/General.aspx?id=2071>

advanced inverters to be set at and verified at installation, and reserves the right to either (a) actively control customer equipment, or (b) monitor customer equipment and periodically signal new settings for customer equipment to follow. These options ensure a coordinated approach to utilizing advanced inverters for maintaining reliable grid operations as system conditions change. Additionally, the host utility has system-wide visibility and situational awareness of actual system operations. They are well positioned to provide the coordinated response required from distributed resources to effectuate the desired response to impact both distribution and transmission operations.

APS acknowledges that more operating experience and lessons learned are required before final recommendations can be made on which entity controls smart inverters. APS believes the construct outlined in the first and second paragraphs is consistent with industry-wide grid operations, especially at the transmission level, where the system operator is required to specify acceptable operating ranges and may require real-time adjustments to generator operating parameters to maintain reliable system operation (according to NERC standards).

**Q. Do smart inverters open a window for aggregators of distributed energy resources to participate in organized markets?**

Advanced inverters are likely to be required for distributed energy resource aggregators to participate in organized markets. However, advanced inverters alone are not likely to enable a distributed energy resource to participate in an organized market. The wide-area control, market design, services provided, and cost for those services are also more important factors. Advanced inverters will likely serve as an enabling technology by providing control, such as voltage and active power, *i.e.*, curtailment, allowing an aggregator to participate in the market.

Based upon the current state of technology, APS does not support third-party aggregation of distributed energy resources. The use of advanced inverters as proposed by APS is limited to mitigation of reliability issues caused by distributed energy resources. However, third party use of advanced inverters to aggregate distributed energy resources does not mitigate reliability issues caused by distributed energy resources. Third parties who wish to participate as aggregators do not have responsibility for reliability of the grid, nor do they have the system-wide visibility or situational awareness of real-time conditions to accurately manage the grid. Third parties are more likely to be vulnerable to cybersecurity threats due to lack of adequate financial resources and may use communication methods more vulnerable to attack, such as unsecured and unreliable customer-provided Wi-Fi. For these reasons, APS does not support third-party aggregation of distributed energy resources at this time, but will continue to monitor technological advancement and market conditions.

**Q. Should Electric Co-ops be subject to the rules?**

APS does not take a position on whether Co-Ops would be subject to the proposed rules.

**E. CONCLUSION.**

APS is committed to and responsible for delivering safe and reliable power consistent with local and national safety standards and providing timely processing of distributed generation applications from customers who desire to become distributed generation customers. The Company reiterates its interest in participating fully in this proceeding and related discussions of these important issues.

Sincerely,

A handwritten signature in black ink, appearing to read "Kerri C", with a long horizontal flourish extending to the right.

Kerri A. Carnes  
Manager  
State Regulation  
Arizona Public Service Company

KAC/jlj  
Attachments

# EXHIBIT A

TITLE 14. PUBLIC SERVICE CORPORATIONS; CORPORATIONS AND ASSOCIATIONS; SECURITIES REGULATION  
CHAPTER 2. CORPORATION COMMISSION  
FIXED UTILITIES

**ARTICLE 26. INTERCONNECTION OF DISTRIBUTED GENERATION FACILITIES**

R14-2-2601. Definitions

R14-2-2602. Applicability

~~R14-2-2603. Types of Generating Facilities~~

R14-2-2604. Customer Rights and Responsibilities

R14-2-2605. Utility Rights and Responsibilities

R14-2-2606. Easements ~~and~~ Rights ~~of~~ Way

R14-2-2607. Insurance

R14-2-2608. Non-Circumvention

R14-2-2609. Designation of Contact Persons

R14-2-2610. Non-discrimination

R14-2-2611. Application Submission Requirements

R14-2-2612. Minor Modifications

R14-2-2613. Certification

R14-2-2614. No Additional Requirements

R14-2-2615. Disconnection from or Reconnection with the Distribution System

~~R14-2-2616. Summary of Interconnection Levels and Tracks~~

R14-2-2617. ~~Screens~~System Requirements

R14-2-2618. ~~Level 1 Super Fast Track~~Application Process for a Generating Facility less than 1MW

R14-2-2619. ~~Level 2 Fast Track~~Application Process for a Generating Facility 1MW and Greater

~~R14-2-2620. Level 3 Study Track~~

R14-2-2621. Interconnection to a Secondary Spot Network System

R14-2-2622. Utility Reporting Requirements

R14-2-26XX. Disconnect Switch Requirements

R14-2-26XX. Battery/Energy Storage General Requirements

R14-2-26XX. Advanced Inverter Requirements

**R14-2-2601. Definitions**

In this Article, unless otherwise specified:

1. "AC" means alternating current.
2. "ANSI" means American National Standards Institute.
3. "Application" means the standard form for applying to interconnect a Generating Facility with the Distribution System.
4. "Commission" means the Arizona Corporation Commission.
5. "Backfeed" means to energize a section of a Utility electric system that is supplied from a source other than its normal source.
6. "Business Day" means Monday through Friday, excluding federal and Arizona state holidays.
7. "Certified Equipment" means a specific generating and protective equipment system or systems that have been certified as meeting the requirements in R14-2-2613 relating to testing, operation, safety, and reliability by an entity approved by the Commission.
- XX"Clearance" means a statement, with documentation, from the Utility that said line or equipment is disconnected from all known sources of power and tagged, and that for safety purposes all proper precautionary measures have been taken and those workmen may proceed to inspect, test, and install grounds on the circuit.
8. "CFR" means Code of Federal Regulations.
9. "Customer" means an electric consumer that generates electricity on the consumer's side of the Utility meter.
10. "DC" means direct current.
11. "Disconnect Switch" means a device that the Customer ~~may be~~is required to install and maintain that is a visible open, manual, gang-operated, load break disconnect device, capable of being locked in a visible open position by a standard Utility padlock that will completely isolate the Customer's Generating Facility from the Utility grid. If the voltage is over 500 volts, it must be capable of being grounded on the Utility side.
12. "Distributed Generation" means any type of Customer electrical generator, static inverter, or Generating Facility interconnected with the Distribution System that either has the capability of being operated in electrical parallel with the Distribution System or can feed a Customer load that can also be fed by the Distribution System.
13. "Distribution System" means the infrastructure constructed, maintained, and operated by a Utility to deliver electric service at the distribution level (21 kV or less) to retail consumers.

14. "Facilities Study" means a comprehensive analysis of the actual construction needed to take place based on the outcome of the System Impact Study.
15. "Fault Current" means the level of current that can flow if a short circuit is applied to a voltage source.
16. "Feasibility Study" means a preliminary review of the potential impacts on the Distribution System that will result from the proposed Interconnection.
17. "Generating Facility" means all or part of the Customer's electrical generator or inverter together with all protective, safety, and associated equipment necessary to produce electric power at the Customer's facility. A Generating Facility also includes any QF.
18. "Good Utility Practice" means any of the practices, methods, and acts engaged in or approved by a significant portion of the electric industry during the relevant time period, or any of the practices, methods, and acts which, in the exercise of reasonable judgment in light of the facts known at the time the decision was made, could have been expected to accomplish the desired result at a reasonable cost consistent with good business practices, reliability, safety, and expedition. Good Utility Practice is not intended to be limited to the optimum practice, method, or act to the exclusion of all others, but rather to be acceptable practices, methods, or acts generally accepted in the region.
19. "IEEE" means The Institute of Electrical and Electronic Engineers.
20. "Interconnection Agreement" means an agreement, together with appendices, signed between the Utility and the Customer, covering the terms and conditions governing the Interconnection and operation of the Generating Facility with the Utility.
21. "Interconnection" means the physical connection of a Generating Facility to the Distribution System.
22. "Interconnection Manual" means a separate document developed and maintained by each Utility, made available on each Utility's web site, ~~and approved by the Commission,~~ containing detailed technical, safety, and protection requirements necessary to interconnect a Generating Facility to the Distribution System.
23. "Interconnection Study" means a study that may be undertaken by a Utility (or a Utility-designated third party) in response to its receipt of a completed Application. An Interconnection Study may include, but not be limited to, a Feasibility Study, a System Impact Study, and a Facilities Study.

24. "Island" means a condition in which a portion of ~~at~~the Utility's Distribution System is energized solely by one or more local electric power systems throughout the associated Point of Interconnection while that portion of the Utility's Distribution System is electrically separated from the rest of the Utility's Distribution System. An Island can be either intentional (planned) or unintentional (unplanned).
25. "kW" means kilowatt.
26. "MW" means megawatt.
27. "NEMA" means the National Electrical Manufacturers Association.
28. "NFPA" means the National Fire Protection Association.
29. "NRTL" means a Nationally Recognized Testing Laboratory.
30. "Parallel System" means the operation of a Generating Facility that is electrically interconnected to a bus common with the Distribution System, either on a momentary or continuous basis.
31. "Point of Interconnection" means the physical location where the Utility's service conductors are connected to the Customer's service conductors to allow parallel operation of the Generating Facility with the Distribution System.
32. "QF" means Qualifying Facility, any cogeneration or small power production facility that meets the criteria for size, fuel use, efficiency, and ownership as promulgated in 18 CFR, Chapter I, Part 292, Subpart B of the Federal Energy Regulatory Commission's Regulations.
- ~~33. "Radial Line" means a distribution line that originates from a substation and is normally not connected to another substation or another circuit sharing the common supply of electric power.~~
34. "Relay" means an electric device that is designed to interpret input conditions in a prescribed manner and after specified conditions are met to respond to cause contact operation or similar abrupt change in associated electric control circuits.
35. "Secondary Spot Network System" means an AC power Distribution System in which a Customer is simultaneously served from three-phase, four-wire low-voltage (typically 480V) circuits supplied by two or more network transformers whose low-voltage terminals are connected to the low-voltage circuits through network protectors. The low voltage circuits do not have ties to adjacent or nearby secondary network systems. The Secondary Spot Network System has two or more high-voltage primary feeders. These primary feeders are either dedicated network feeders that serve only other network transformers, or a non-dedicated network feeder that serves radial transformers in addition to the network transformer, depending on network size and design. The system includes automatic protective devices and fuses intended

to isolate faulted primary feeders, network transformers, or low-voltage cable sections while maintaining uninterrupted service to the consumers served from the low-voltage circuits.

~~36. "Separate System" means the operation of a Generating Facility that has no possibility of operating in parallel with the Distribution System.~~

37. "System Impact Study" means a full engineering review of all aspects of the Generating Facility's impact on the Distribution System, including power flow, Utility system protective device coordination, generator protection schemes (if not certified), stability, voltage collapse, frequency impacts, and short circuit duty.

38. "UL" means Underwriters Laboratories Inc.

39. "Utility" means an electric ~~distribution~~power company that constructs, operates, and maintains ~~theits~~ Distribution System for the receipt and/or delivery of electric power.

#### **R14-2-2602. Applicability**

##### **A. These regulations:**

1. Apply to any Generating Facility with a power rating of ~~10 MW or less~~up to 10 MW at the discretion of the serving Utility and as specified in the serving Utility's Interconnection Manual, operating (or applying to operate) in parallel with ~~at~~the Utility's Distribution System, ~~subject to Commission jurisdiction; and~~

2. Establish ~~technical and~~ procedural requirements, terms, and conditions to promote the safe and effective parallel operation of a Generating Facility; ~~with the Distribution System.~~

~~3. Include provisions for interconnecting to a radial or Secondary Spot Network System; and~~

~~4. Include three distinct types of generators:~~

~~a. Solid-state or static inverters;~~

~~b. Induction machines; and~~

~~c. Synchronous machines.~~

B. The total capacity of an individual Generating Facility may exceed 10 MW; however, ~~no more than 10 MW of a~~these rules do not apply to any Utility Scale power plants or any proposed rotating machines. ~~Generating Facility's capacity can be interconnected at a single Point of Interconnection; system size connected to the Distribution System shall be determined by the serving Utility.~~

C. The electric rates and schedules, terms and conditions of service, or other contract provisions governing the electric power sold by a Utility to an Arizona retail consumer are subject to the jurisdiction of the Commission. The Commission also has jurisdiction when the Utility purchases excess power from a QF under 18 CFR 292.303 and 18 CFR 292.306 (2004).

D. The Federal Energy Regulatory Commission has jurisdiction over an Interconnection with facilities that are subject to the Utility's Open Access Transmission Tariff.

**R14-2-2603. Types of Generating Facilities**

Generating Facilities include induction and synchronous electrical generators as well as any type of electrical inverter capable of producing AC power. A Generating Facility may be operated in Parallel with the Distribution System (either on a continuous basis or momentarily), or as a Separate System with non-parallel load transfer between the two independent power systems.

A. Parallel System. The Generating Facility becomes an integral part of the Distribution System, and it must be considered in the electrical protection and operation of the Distribution System.

1. A Parallel System includes any type of Generating Facility that can electrically parallel with, or potentially Backfeed the Distribution System. Any Generating Facility using a closed transition type transfer switch or a multi-breaker transfer scheme, or an electrical inverter that can be configured or programmed to operate in an interactive mode, may be required to have a Relay to prevent potential Backfeed to the Distribution System, and is classified as a Parallel System. A continuous uninterruptible power supply, a unit without grid tie capability, and an islanding inverter technology are not considered a Parallel System provided it is not a potential Backfeed source to the Distribution System.

2. The Utility has specific Interconnection, contractual, and inspection requirements that must be complied with and information that needs to be submitted for all interconnected Generating Facilities. These may include protective relaying, metering, special rate schedules, applicable safety devices, and information requirements as specified in the Interconnection Manual.

3. There are two sub-types of a Parallel System:

a. Momentary Parallel System. A Momentary Parallel System transfers electrical load between the Distribution System and the Generating Facility by means of a "make-before-break" transfer scheme. A Momentary Parallel System synchronizes the Generating Facility with the Distribution System for a period not to exceed 10 seconds for the purpose of uninterrupted load transfer. A Momentary Parallel System is useful for a Customer who wishes to have greater reliability of electric service without experiencing the momentary outage of service that occurs under a "break-before-make" transfer switch scheme. Additionally, this approach allows the Customer to more effectively test the switchgear and generator with load during weekly and monthly testing.

~~b. Islandable System. An Islandable System is a Generating Facility interconnected to a bus common with the Distribution System, where the Generating Facility is designed to serve part of the Distribution System that has become or is purposefully separated from the rest of the Distribution System.~~

~~B. Separate System. A Separate System is one in which there is no possibility of electrically connecting or operating the Generating Facility in parallel with the Distribution System. The Customer's equipment must transfer load between the two power systems in an open transition or non-parallel mode. If the Customer claims a Separate System, the Utility may require verification that the transfer scheme meets the non-parallel requirements.~~

~~1. A Separate System used to supply part or all of the Customer's load during a Utility power outage must be connected to the Customer's wiring through a double throw, "break-before-make" transfer switch specifically designed and installed for that purpose. The transfer switch must be of a fail-safe design, which, under no circumstances, will allow the Generating Facility to electrically interconnect or parallel with the Distribution System. The transfer switch must always disconnect the Customer's load from the Distribution System prior to connecting it to the Generating Facility. Conversely, the transfer switch must also disconnect the load from the Generating Facility prior to re-connecting it with the Distribution system. These requirements apply to both actual emergency operations as well as any testing of the Generating Facility. All transfer switches and transfer schemes must be listed by an NRTL for the purpose as used, and also inspected and approved by the jurisdictional electrical inspection agency.~~

~~2. A portable generator is one sub-type of a Separate System. Portable generators are not designed to be connected to a building's permanent wiring system, and are not to be connected to any such wiring unless a permanent and approved transfer switch is used. Failure to use a transfer switch can result in Backfeed into the Distribution System. The transfer scheme must meet the non-parallel requirements.~~

E The Federal Energy Regulatory Commission has jurisdiction over an Interconnection with facilities that are subject to the Utility's Open Access Transmission Tariff.

#### **R14-2-2604. Customer Rights and Responsibilities**

A. A Customer has the right to submit an Application to interconnect a Generating Facility with the Distribution System. The Customer has the right to expect prompt, reasonable, and professional responses from the Utility at every step of during the Interconnection process. The Customer has the

right to expect reasonable cost estimates, outlines of the proposed work, supporting data, and justification for proposed work before the Utility undertakes any studies or system upgrades to accommodate the Generating Facility.

**B.** The Customer has the responsibility of disclosing to the Utility items specified herein on the Generating Facility and its operation. The Customer also has the responsibility of ensuring that:

1. The Generating Facility meets all ~~minimum~~interconnection, safety and protection requirements outlined in these provisions and the Utility's Interconnection Manual;
2. The Generating Facility meets all applicable construction codes, safety codes, electric codes, laws, and requirements of government agencies having jurisdiction;
3. All the necessary protection equipment is installed and operated to protect the Generating Facility, Utility personnel, the public, and the Distribution System;
4. The Generating Facility design, installation, maintenance, and operation reasonably minimizes the likelihood of causing a malfunction or other disturbance, damaging, or otherwise impairing the Distribution System;
5. The Generating Facility does not adversely affect the quality of service to other consumers (but no more or less than the present standard of care observed by regular Utility/consumer connections);
6. The Generating Facility ~~minimally hampers~~does not hamper efforts to restore a feeder to service (specifically when a clearance is required);
7. The Generating Facility is maintained in accordance with applicable manufacturers' maintenance schedule; and
8. The Utility is notified of any emergency or hazardous condition or occurrence with the Generating Facility, which could affect safe operation of the Distribution System. (~~This notification can be through electronic communication.~~)

**C.** The Customer is responsible for all Interconnection facilities required to be installed to interconnect the Generating Facility to the Distribution ~~system~~System. These ~~may~~ include connection, transformation, switching, protective relaying, metering and safety equipment, and any other requirements as outlined in this Article ~~or other special items~~and as specified by the Utility. All such Interconnection facilities are to be installed by the Customer at its sole expense.

**D.** The Customer, or Customer's agent, shall own and be responsible for designing, installing, operating and maintaining control and protective devices, in addition to minimum protective devices and relays specified in the Utility's Interconnection Manual, to protect its facilities from abnormal

operating conditions such as, but not limited to, electric overloading, abnormal voltages, and Fault Currents. Such protective devices must promptly disconnect the Generating Facility from the Distribution System in the event of a power outage on the Distribution System. The Customer shall also own and be responsible for designing, installing, operating and maintaining Interconnection facilities on the Customer's premises as may be required to deliver power from the Generating Facility to the Distribution System at the Point of Interconnection.

- E. In the event that additional facilities are required to be installed on the Distribution System to accommodate the Customer's generation, the Utility will install such facilities at the Customer's expense, ~~including administrative costs.~~ The Utility shall provide notice to the Customer of intent to install such facilities ~~early induring~~ the Interconnection Study process. ~~The Customer is not responsible for Utility upgrades for other consumers unrelated to the Generating Facility installation.~~
- F. Customers interconnecting a Generating Facility with the Utility system shall:
1. Sign an Interconnection Agreement, and all other applicable purchase, supply, and standby agreements; and
  2. Comply with all applicable tariffs, rate schedules and Utility service requirements.

**R14-2-2605. Utility Rights and Responsibilities**

- A. The Utility ~~is obligated to interconnect~~ will specify its rights and responsibilities for interconnecting Generating Facilities to the Utility's Distribution System, subject to the requirements set forth in ~~this Article and in~~ each Utility's Interconnection Manual.
- B. The Utility has the right to expect ~~prompt,~~ reasonable, and professional responses from the Customer during the Interconnection process.
- C. Because the Utility is required to safeguard its system, other consumers, and the general public, the Utility has the right and responsibility to ~~ensure~~ require that an interconnected Generating Facility:
1. Will not present any ~~unreasonable~~ hazards to Utility personnel, other consumers, or the public;
  2. ~~Minimizes~~ Minimize the possibility of damage to ~~the~~ Utility and other consumers' equipment; ~~and~~
  3. ~~Minimally hampers~~ Not adversely affect the quality of service to other consumers; and
  4. Not hamper efforts to restore a feeder to service (specifically when a ~~clearance~~ Clearance is required).
- D. The Utility will notify the Customer if there is ~~any evidence~~ reason to believe that the Customer's Generating Facility operation causes disruption or deterioration of service to other consumers served from the Distribution System or if such operation causes damage to the Distribution system.

- E. The Utility has the responsibility to make its Interconnection Manual, standard Application forms and Interconnection Agreements readily available to Customers in print and online formats.
- F. ~~Before the Utility undertakes any studies or system upgrades that will be charged to the Customer~~Following the receipt of Customers completed Application, the Utility may perform an engineering review to determine if an Interconnection Study is required. As part of the Interconnection Study process, the Utility has the responsibility to provide a detailed cost estimate, outline of the proposed work, supporting data, and justification for the proposed work. The Interconnection Study determines whether any additional facilities will be required to be installed to the Utility's Distribution System. The Interconnection Study will also provide estimated cost.
- G. ~~The Utility must show good cause why a Generating Facility that satisfies the requirements of the Utility's Interconnection Manual should not be approved for interconnected operation. H. If facility upgrades are needed to accommodate the Generating Facility, a Utility shall reduce the charge of the upgrade to the Customer by the amount of benefits, if any, to the grid that are readily quantifiable by the Utility. In addition, a Utility cannot reject an Application on the basis of Distribution System conditions that are already deficient, or~~Utility cannot charge a Customer for planned facility upgrades ~~that are overdue or soon to be required to ensure compliance with Good Utility Practice,~~ except that ~~applications~~Applications can be rejected in instances where reliability or safety would be further compromised by a Distributed Generation installation. A Utility shall not charge a Generating Facility Customer differently than any other consumer for facility upgrades in accordance with generally applicable Commission-approved tariffs.

**R14-2-2606. Easements/ and Rights -of -Way**

Utility Right to Access Utility-Owned Facilities and Equipment. Where an easement or right -of -way does not exist, but is required by the Utility to accommodate the Interconnection, the Customer must provide suitable easements or rights -of -way, in the Utility's name, on the premises owned, leased, or otherwise controlled by the Customer. If the required easement or right -of -way is on another's property, the Customer must obtain and provide to the Utility a suitable easement or right -of -way, in the Utility's name, at the Customer's sole cost, and in sufficient time to comply with the Interconnection Agreement requirements. The Utility shall use reasonable efforts to utilize existing easements to accommodate the Interconnection-to the extent possible, and shall use reasonable efforts to assist the Customer in securing necessary easements (at the Customer's expense) that do not exist but are necessary to accommodate the Interconnection.

**R14-2-2607. Insurance**

- A. Insurance requirements shall be specified in the Utility's Interconnection Manual. The Customer ~~is~~ ~~not~~may be required to provide general liability insurance coverage as a condition for Interconnection based on system size and technology. Due to the risk of incurring damages, it is recommended that every Interconnection Customer protect itself with insurance or other suitable financial instrument sufficient to meet its construction, operating, and liability responsibilities. At no time shall the Utility require that the Customer negotiate any policy or renewal of any policy covering any liability through a particular insurance provider, agent, solicitor, or broker.
- B. The inability of the Utility to require the Customer to provide general liability insurance coverage for operation of the Generating Facility is not a waiver of any rights the Utility may have to pursue remedies at law against the Customer to recover damages.

**R14-2-2608. Non-Circumvention**

~~A~~ Utility and its affiliates shall not use knowledge of proposed Distributed Generation projects submitted to it for Interconnection or study to initiate competing proposals to the Customer that offer either discounted rates in return for not installing the Distributed Generation, or offer competing Distributed Generation projects. Customers are not precluded from sharing information in their possession regarding a potential Distributed Generation project with a Utility or its affiliates, or from using information regarding a potential Distributed Generation project to negotiate a discounted rate or other mutually beneficial arrangement with a Utility or its affiliates. The Utility shall be permitted to inform the Customer of existing or pending (awaiting approval by the Commission) rate schedules that may economically benefit, economically disadvantage, or otherwise affect the Customer's project.

**R14-2-2609. Designation of Contact Persons**

- A. Each Utility shall designate a person or persons to serve as the Utility's contact for all matters related to Distributed Generation Interconnection; identify to the Commission its Distributed Generation contact person; and provide convenient access through its web site to the ~~names~~, telephone numbers, mailing addresses and electronic mail addresses for its Distributed Generation contact person or persons.
- B. Each Customer applying for Interconnection shall designate a contact person or persons, and provide to the Utility the contact's name, telephone number, mailing address, and electronic mail addresses.

**R14-2-2610. Non-discrimination**

All Applications for Interconnection and parallel operation of Distributed Generation shall be processed by the Utility in a non-discriminatory manner.

**R14-2-2611. Application Submission Requirements**

The Utility may require additional documentation be submitted with the Application. Each Utility's Application form shall specify what additional documentation is required. Additional documentation may include an electrical one-line diagram, an electrical three-line diagram, AC and DC control schematics, plant location diagram, and site plan. Upon request, the Utility shall provide the Customer with sample diagrams that indicate the preferred level of detail and type of information required for a typical inverter-based system.

#### **R14-2-2612. Minor Modifications**

It is recognized that certain Applications may require minor modifications to the Generating Facility or the Application while they are being reviewed by the Utility. ~~Such minor modifications to a~~ pending Application ~~shall not require that it~~requiring minor modifications may be considered incomplete and treated as a new or separate Application.

#### **R14-2-2613 Certification**

~~A.~~ In order to qualify as Certified Equipment for any Interconnection procedures, relevant equipment must comply with ~~the following~~applicable codes, guides, and standards:

- ~~1. IEEE 1547 Standard for Interconnecting Distributed Resources with Electric Power Systems (including use of IEEE 1547.1 testing protocols to establish conformity);~~
- ~~2. IEEE 1547.1 Standard for Conformance Testing Procedures for Equipment Interconnecting Distributed Resources with Electric Power Systems;~~
- ~~3. UL 1741 Inverters, Converters, and Controllers for Use in Independent Power Systems;~~
- ~~4. IEEE Std 929-2000 IEEE Recommended Practice for Utility Interface of Photovoltaic (PV) Systems;~~
- ~~5. NFPA 70 (2002), National Electrical Code;~~
- ~~6. IEEE Std C37.90.1-1989 (R1994), IEEE Standard Surge Withstand Capability (SWC) Tests for Protective Relays and Relay Systems;~~
- ~~7. IEEE Std C37.90.2 (1995), IEEE Standard Withstand Capability of Relay Systems to Radiated Electromagnetic Interference from Transceivers;~~
- ~~8. IEEE Std C37.108-1989 (R2002), IEEE Guide for the Protection of Network Transformers;~~
- ~~9. IEEE Std C57.12.44-2000, IEEE Standard Requirements for Secondary Network Protectors;~~
- ~~10. IEEE Std C62.41.2-2002, IEEE Recommended Practice on Characterization of Surges in Low Voltage (1000V and Less) AC Power Circuits;~~
- ~~11. IEEE Std C62.45-1992 (R2002), IEEE Recommended Practice on Surge Testing for Equipment Connected to Low-Voltage (1000V and Less) AC Power Circuits;~~

~~12. ANSI C84.1-1995 Electric Power Systems and Equipment – Voltage Ratings (60 Hertz);~~

~~13. IEEE Std 100-2000, IEEE Standard Dictionary of Electrical and Electronic Terms~~

~~14. NEMA MG 1-1998, Motors and Small Resources, Revision 3;~~

~~15. IEEE Std 519-1992, IEEE Recommended Practices and Requirements for Harmonic Control in Electrical Power Systems; and~~

~~16. NEMA MG 1-2003 (Rev 2004), Motors and Generators, Rev. 1.~~

**B.** In order to qualify as Certified Equipment, Generating Facility equipment proposed for use separately or packaged with other equipment in an Interconnection system must comply with the following requirements:

1. It has been tested in accordance with industry standards for continuous utility interactive operation in compliance with the appropriate codes and standards ~~referenced in R14-2-2613(A)~~ by any NRTL recognized by the U. S. Occupational Safety and Health Administration to test and certify Interconnection equipment pursuant to the relevant codes and standards ~~listed above~~;

2. It has been labeled and is publicly listed by such NRTL at the time of the Interconnection ~~application~~ Application; and

3. Such NRTL makes readily available for verification all test standards and procedures it utilized in performing such equipment certification, and, with Customer approval, the test data itself. The NRTL may make such information available on its web site and by encouraging such information to be included in the manufacturer's literature accompanying the equipment.

**C.** The Customer must verify that the intended use of the equipment falls within the use or uses for which the equipment was tested, labeled, and listed by the NRTL.

**D.** ~~Certified Equipment will not require further type-test review, testing, or additional equipment to meet the requirements of this Article and the Utility's Interconnection Manual.~~ Nothing herein shall preclude the need for project Interconnection review and approval by the Utility or on-site commissioning testing prior to the Interconnection nor follow-up production testing by the NRTL.

**E.** If the Certified Equipment includes only interface components (switchgear, inverters, or other interface devices), then a Customer must show, upon request from the serving Utility, that the Generating Facility is compatible with the interface components and is consistent with the testing and listing specified for this type of Interconnection equipment.

**F.** Certified Equipment does not include equipment provided by the Utility.

**R14-2-2614. No Additional Requirements**

If a Generating Facility complies with all applicable requirements, a Utility may not require the Customer to install additional controls, or perform or pay for additional tests, in order to obtain approval to interconnect except as mutually agreed to by the parties or required by the Commission. Additional equipment may be installed by the Utility at its own expense.

**R14-2-2615 Disconnection from or Reconnection with the Distribution System**

**A. A Utility may disconnect a Generating Facility from the Distribution System under the following conditions:**

1. Expiration or termination of Interconnection Agreement. The Interconnection Agreement specifies the effective term and termination rights of the Utility and the Customer. Upon expiration or termination of the Interconnection Agreement with a Customer, in accordance with the terms of the agreement, the Utility may disconnect a Generating Facility.
2. Non-compliance with technical Interconnection requirements. A Utility may disconnect a Generating Facility if the facility is not in compliance with the technical requirements. Within ~~two business days~~ ten (10) Business Days from the time the Customer notifies the Utility that the ~~facility~~ Generating Facility has been restored to compliance with the technical requirements, the Utility shall have an inspector verify such compliance. Upon such verification, the Customer in coordination with the Utility may reconnect the facility.
3. System emergency. A Utility may temporarily disconnect a Generating Facility without prior written notice in cases where continued Interconnection of the Generating Facility will endanger system operations, persons or property. During the forced outage of a Distribution System, the Utility may temporarily disconnect a Generating Facility to make immediate repairs on the Distribution System. If the Utility determines that the Generating Facility caused the system emergency, Customer shall be fully responsible for the costs of Distribution System upgrades and repairs. When possible, the Utility shall provide the Customer with reasonable notice. The Utility shall reconnect the Generating Facility as quickly as practical, and after the Utility's determination that the Generating Facility's operations have been mitigated to the Utility's satisfaction
4. Routine maintenance, repairs, and modifications. A Utility may disconnect a Generating Facility from the Distribution System with reasonable prior notice of a service interruption for routine maintenance, repairs, and system modifications. The Utility shall allow reconnection of the Generating Facility as quickly as practical following any such service interruption.

5. Absence of executed Interconnection Agreement. In order to interconnect a Generating Facility to a Distribution System, the Customer and the Utility must execute an Interconnection Agreement. The Utility may refuse to connect or may disconnect the Generating Facility if an executed Interconnection Agreement is not in effect.
- B. The parties shall cooperate with each other to restore the Generating Facility and the Distribution System to their normal operating state as soon as practical.
- C. Temporary disconnection by Customer. The Customer may temporarily disconnect its Generating Facility from the Distribution System at any time. Such temporary disconnection shall not be a termination of the Interconnection Agreement unless specified as such.
- D. Agreement survival rights. The Interconnection Agreement between the Utility and the Customer shall continue in effect after disconnection or termination of electric service to the extent necessary to allow or require either party to fulfill rights or obligations that arose under the agreement notwithstanding the items in Section E(4) below.
- E. Duration and Termination of the Interconnection Agreement. The Interconnection Agreement shall become effective on the effective date specified in the agreement and shall remain in effect thereafter unless and until:
1. It is terminated by mutual agreement of the parties;
  2. It is replaced by another Interconnection Agreement with mutual consent of the parties;
  3. It is terminated by either party pursuant to a breach or default of the agreement; or
  4. The Customer terminates its Utility electric service and/or vacates or abandons the property on which the Generating Facility is located, or the Generating Facility, without mutual agreement of the parties.
- F. Upon termination of the Interconnection Agreement, the Customer shall be responsible for ensuring that the electrical conductors connecting the Generating Facility to the Distribution System are immediately lifted and permanently removed, so as to preclude any possibility of interconnected operation in the future. The Utility may inspect the Generating Facility to verify that it is permanently disconnected.

**R14-2-2616. Summary of Interconnection Levels and Tracks**

- ~~A. Level 1 Super Fast Track. Certified inverter-based facilities that have a power rating of 10 kW or less, are interconnected on a Radial Line, and meet screens (E) and (F) in R14-2-2617, below. Refer to R14-2-2618 for additional details.~~

- ~~B. Level 2 Fast Track. Generating Facilities that have a power rating of 2 MW or less, are interconnected on a Radial Line, and meet screens (A) through (I) in R14-2-2617. Refer to R14-2-2619 for additional details.~~
- ~~C. Level 3 Study Track. Generating Facilities that have a power rating of 10 MW or less that do not meet the criteria or screens for other Levels. Interconnection studies may be required. Refer to R14-2-2620 for additional details.~~
- ~~D. Distribution Networks. On an interim basis, certified inverter-based Generating Facilities that have a power rating of 10 kW or less will be allowed to be interconnected on a secondary spot network system and otherwise as approved by the Utility. Generating Facilities will only be interconnected on a trial, pilot basis, at the discretion of the Utility, under the Interconnection process set forth in the Utility's Interconnection Manual. Refer to R14-2-2621 for additional details.~~

**R14-2-2617. ~~Screens~~System Requirements**

- A. For Interconnection of a proposed Generating Facility to a ~~radial~~non-network distribution circuit, the aggregated generation, including the proposed Generating Facility, on the circuit will not exceed 15% of the total circuit annual peak load as most recently measured at the substation or on a line section unless otherwise determined by the serving Utility. In the case of generators certified to UL 1741 and IEEE 1547, a line section is that portion of a Distribution System connected to a Generating Facility bounded by automatic sectionalizing devices, or the end of the distribution line. ~~For non-certified generators, a line section is that portion of a Distribution System connected to a Generating Facility bounded by automatic sectionalizing devices, a fused lateral, or the end of the distribution line.~~ The aggregated generation, including the proposed Generating Facility, must also be less than 50% of the minimum daytime feeder or line section load unless otherwise determined by the serving Utility, where these data are available, unless the minimum load is zero.
- B. ~~The proposed Generating Facility, and new motors associated with the proposed generator, in aggregation with other generation on the distribution circuit,~~ will not contribute more than 10% to the distribution circuit's maximum Fault Current at any point on the Distribution System, including normal contingency conditions that may occur due to reconfiguration of the feeder or the distribution substation.
- C. The proposed Generating Facility, in aggregate with other generation on the distribution circuit, will not cause any distribution protective devices and equipment (including but not limited to substation breakers, fuse cutouts, and line reclosers), or consumer equipment on the system, to exceed 90% of

the short circuit interrupting capability; nor is the Interconnection proposed for a circuit that already exceeds 90% of the short circuit interrupting capability.

D. The proposed Generating Facility is interconnected to the Utility as shown in the table below:

<u>Primary distribution line configuration</u>	<u>Interconnection to primary distribution line</u>
<u><del>Three phase, three wire</del></u>	<u><del>If a three phase or single phase generator, Interconnection must be phase-to-phase</del></u>
<u>Three-phase, four wire</u>	<u>If a three-phase (effectively grounded) or single-phase generator, Interconnection must be line-to-neutral</u>

- E. If the proposed Generating Facility is to be interconnected on single-phase shared secondary, the aggregate generation capacity on the shared secondary, including the proposed Generating Facility, cannot exceed 10 kW, and the proposed generator must be listed to UL 1741.
- F. If the proposed Generating Facility is single-phase and is to be interconnected on a transformer center tap neutral of a 240 volt service, its addition will not create an imbalance between the two sides of the 240 volt service of more than 20% of nameplate rating of the service transformer.
- G. The proposed Generating Facility, in aggregate with other generation interconnected to the distribution low voltage side of the substation transformer feeding the distribution circuit where the generator proposes to interconnect, will not exceed 10 MW in an area where there are known or posted transient stability limitations to generating units located in the general electrical vicinity (e.g., three or four transmission voltage level (69 kV or higher) busses from the Point of Interconnection).
- H. The proposed Generating Facility's Point of Interconnection will not be on a transmission (69 kV or higher) line.
- I. The proposed Generating Facility cannot exceed the capacity of the Customer's existing electrical service.

**R14-2-2618. ~~Level 1 Super Fast Track~~Application Process for a Generating Facility Less Than 1 Megawatt (MW)**

- A. The ~~Level 1 Super Fast Track~~Application process for a Generating Facility Less Than 1 MW is available to Customers interconnecting ~~either a single certified static inverter, with a continuous output power nameplate rating of 10 kW or less, or multiple certified static inverters with a combined continuous power nameplate rating of 10 kW or less, screen (E);~~an inverter-based Generating Facility that is more than 1 kW and less than 1 MW to the Distribution System. The

inverters must ~~be~~meet current applicable codes and standards, including UL 1741 listed, and certified to meet the shutdown protective functions (under/over voltage, under/over frequency and anti-islanding) specified in IEEE ~~929, screen (F)~~1547 or equivalent standard. The Generating Facility must also meet all applicable codes and standards, as well as comply with the Utility Interconnection and contractual requirements.

B. Nothing in this process precludes the Customer and Utility from mutually agreeing to different time-frames or other procedures for the approval of interconnected operation of a Generating Facility, so long as the project progresses as agreed to by the parties. Nothing in this process precludes the Customer from starting construction prior to contacting the Utility; however, the Customer accepts the risk of potentially needing to modify or substantially change the installation.

C. The ~~Level 1 Super Fast Track~~Less Than 1 MW Application steps are as follows:

1. Customer Submits Application. The Customer completes the Application and submits it to the Utility along with all required supplemental information and documents, which shall be noted on the Application. The Customer ~~may submit~~submits a pre-executed Interconnection Agreement ~~together~~along with the Application, if ~~permitted~~required by the Utility. ~~No initial application fee or processing fee will be charged.~~
2. Application is Received and is Complete or Incomplete. The Utility notifies the Customer within ~~seven~~sixty (60) calendar days of receipt of the Application as to whether it is complete or incomplete.
  - a. If the Application is incomplete, the Utility will specify what ~~additional~~ information and/or ~~material~~documentation is necessary to complete the Application.
  - b. The Customer has ~~thirty~~ (30) calendar days after receipt of such notification to submit the required information or ~~materials (or request an extension)~~documentation, or the Application may be considered withdrawn.
  - c. The Customer has ~~thirty~~ (30) calendar days after receipt of such notification to inform the Utility as to whether or not it wishes to proceed with the project. If the Utility is not notified within the specified timeframe, the Application may be considered withdrawn.
3. Utility Reviews Application. Within ~~12~~sixty (60) calendar days following the receipt of a complete Application, the Utility shall review the proposed Interconnection and notify the Customer of one of the following determinations:
  - a. The proposed Generating Facility design appears to meet all Interconnection requirements and the Application is approved as submitted. ~~If not pre-executed, the Utility shall prepare;~~

- ~~b. A determination that~~ an Interconnection ~~Agreement and forward it to the Customer for review and signature~~ Study will be required pursuant to R14-2-2605(F) and in accordance with ~~Step (4) below~~ the Utility's Interconnection Manual; or
- ~~b.c.~~ The proposed Generating Facility design has failed to meet one or more of the Utility's Interconnection requirements, and the Application ~~is~~ may be denied. The Utility shall provide an explanation of the reasons for the denial (in writing, unless otherwise requested by the Customer), and specify what additional information or modifications to the Generating Facility or Distribution System are required in order to obtain approval of the proposed design.
- ~~i.d.~~ If the Application is denied, the Customer shall notify the Utility within ~~21~~thirty (30) calendar days whether or not it wishes to proceed with the project.

  - ~~i.~~ If the Customer does not wish to proceed with the project, or the Utility is not notified within the specified time-frame, the Application may be considered withdrawn.
  - ~~ii.~~ If the Customer wishes to proceed with the project, then ~~a new Application shall be submitted to the Utility for review and processing (Step (1) above is re-initiated), along with~~ within thirty (30) calendar days, the Customer must submit to the Utility any additional information and modifications to the Generating Facility.
  - ~~ii.~~ ~~Alternatively, the Customer may request processing under Level 2 Fast Track or Level 3 Study Track and shall provide any additional information requested by the Utility and necessary to process the request under Level 2 Fast Track or Level 3 Study Track.~~
- 4. Interconnection Agreement. If the Generating Facility meets all of the applicable interconnection requirements and the Application is approved, then:

  - ~~a. Within seven calendar days after the notice of Application approval, or following receipt of any "as built" or final diagrams from the Customer, the Utility sends to the Customer the appropriate Interconnection Agreement for review and signature. (This step may be omitted if the Utility has received a pre-executed Interconnection Agreement).~~
  - ~~b. The Customer reviews, signs, and returns the Interconnection Agreement to the Utility. c. —~~ The Customer then completes installation of the Generating Facility within ~~180~~ calendar days after execution of the Interconnection Agreement, unless an extension is mutually agreed to by the parties, which extension shall not be unreasonably withheld. The Utility has the right to terminate any Interconnection Agreement, and the Application may be considered

~~withdrawn in the event that this time-frame is exceeded without extension.~~sixty (60) calendar days after notice of approval;

b. The Customer will submit to the Utility a copy of the final electrical clearance for the Generating Facility issued by the authority having jurisdiction, if required; and

c. The Customer will submit all necessary supplemental documents as specified by the Utility.

5. Inspection and Testing. ~~The Customer will give the Utility at least seven calendar days notice to schedule the Utility site inspection and inverter shutdown testing. The Utility may schedule metering replacement, if necessary, and labeling of Utility equipment to occur at the same time. There will be no charge for one initial site inspection by the Utility.~~a. The Utility shall perform the site inspection and verify that the Generating Facility, as best as can be determined, is in compliance with all applicable Interconnection and code requirements. At a minimum, the Utility shall verify the following:

~~i. An electrical permit and/or clearance has been issued by the authority having jurisdiction, if required;~~

ii.a. All Generating Facility equipment is properly labeled;

ii.b. The Generating Facility system layout is in accordance with the plant location and site plans submitted to the Utility;

iv.c. Inverter nameplate ratings are consistent with the information submitted to the Utility;

vi.d. The Utility has unrestricted 24-hour access to the Utility-owned production meter and Disconnect Switch ~~(if required)~~, and the ~~switch~~Disconnect Switch meets all applicable requirements; and

vii.e. The inverter shuts down as required upon simulated loss of Utility voltage; ~~and~~.

f. The Utility shall communicate additional testing and startup requirements to the Customer at the Utility's discretion.

viii.g. The Generating Facility is wired, as best as can be determined, in accordance with the electrical diagrams submitted to the Utility.

~~b. The Utility will normally before or at the time of the site inspection: i. Install appropriate metering if required;~~6. The Utility will install appropriate metering equipment if required.

~~ii. Label all Utility equipment; and~~

~~iii. Ensure that the Generating Facility is properly incorporated onto Utility operating maps and identified as a Backfeed source.~~

~~e. The Utility does not have the right to fail a site inspection in the event that any of the above three requirements (metering, Utility equipment labeling, and the identification of the Generating Facility on the operating maps) are not in place at the time of the site inspection. The Utility does have the right to fail any Generating Facility that does not meet the applicable Interconnection requirements, is not installed in accordance with the documentation submitted to the Utility, or as a result of any safety or protection violation.~~

6.7. Notification. ~~Immediately following~~Within thirty (30) calendar days of the completion of the site inspection and ~~upon the~~ receipt of all final applicable signed Interconnection documents, the Utility shall determine whether or not the Generating Facility meets all applicable requirements, and notify the Customer that:

- a. ~~The Generating Facility is approved for parallel operation with the Distribution System per the agreed terms and conditions. Within one business day following such oral notification, the Utility shall provide the Customer with such notice in writing;~~ or
- b. ~~The Generating Facility has failed to the inspection and does not~~ meet one or more of the applicable requirements ~~or a safety or protection violation has been identified~~, and the Generating Facility is not approved for parallel operation. The Utility must provide the reasons (in writing, unless otherwise requested by the Customer) for not approving parallel operation. Furthermore, the Utility has the right to take any reasonable steps (including locking open the Disconnect Switch) to prevent the Generating Facility from parallel operation. Operation of a Generating Facility in parallel without Utility approval may result in immediate termination of electric service to the Customer.

7.8. Corrections. In the event that the Generating Facility does not pass the initial Utility site inspection:~~a. The, the~~ Customer must correct any outstanding issues and ~~schedule a re-inspection. The Utility shall re-inspect upon seven calendar days notice from the Customer to verify that the deficiencies have been remedied. The Utility may charge a fee for each re-inspection, if a tariff containing such a fee is approved by the Commission. Within one business day following any site re-inspection, where the Utility approves parallel operation of the Generating Facility, the Utility shall provide written notification to the Customer that the Generation Facility is approved for parallel operation~~a re-inspection must be scheduled within thirty (30) calendar days. If the Utility is not notified within that timeframe, the Application may be withdrawn by the Utility unless alternative arrangements have been made by the Customer with the Utility.

~~b. If updated diagrams are required to reflect “as-built” conditions, the Customer must submit these to the Utility for review and approval within 12 calendar days following the site inspection. The Utility shall process and mail an amendment to the Interconnection Agreement within seven calendar days after receipt and acceptance of the revised diagrams for Customer review and signature.~~<sup>9.</sup> Interconnection of Generation Facility. The installation must be interconnected within 180 calendar days of Application approval unless otherwise agreed to by the Utility. The Utility may terminate the Application and any Interconnection Agreement, in the event that this time-frame is exceeded.

~~**R14-2-2619. Level 2 Fast Track**~~**R14-2-2619. Application Process for a Generating Facility of One (1) MW and Greater**

- ~~A. Level 2 Fast Track~~The Application process for a 1 MW and greater Generating Facility is available to Customers interconnecting ~~an inverter-based~~ ~~Generating Facility with a continuous output power nameplate rating of 2 MW or less~~ that is one (1) MW or greater to the Distribution System. ~~In order to qualify for Level 2 Fast Track, the Generating Facility must meet screens (A) through (I) in R14-2-2617. The Generating Facility~~ The inverter must also meet all currently applicable codes and standards, including UL 1741 listed, and must be certified to meet the shutdown protective functions (under/over voltage, under/over frequency, and anti-islanding) specified in IEEE 1547 or an equivalent standard. The Generating Facility must also meet all applicable codes and standards, as well as comply with the Utility Interconnection and contractual requirements.
- ~~B. Nothing in this process precludes the Customer and Utility from mutually agreeing to different time-frames or other procedures for the approval of interconnected operation of a Generating Facility, so long as the project progresses as agreed to by the parties. Also, nothing in this process precludes the Customer from starting construction prior to contacting the Utility; however, in such case the Customer accepts the risk of potentially needing to modify or substantially change the installation.~~The Application steps for a 1MW and Greater Generating Facility are as follows:
- ~~C. The Level 2 Fast Track steps are as follows:~~
- ~~1. Prior to Submitting~~Customer Submits Application. The Customer ~~may contact the Utility at the conceptual stages of the design to discuss the proposed design, installation, and operation. Upon the Customer’s request, the Utility shall meet with the Customer prior to submission of an~~ shall complete the Application and submit it to the Utility along with all required supplemental information, which shall be noted on the Application ~~form.~~ The Customer shall also submit a

signed Interconnection Agreement, Operating Agreement (if required), and a Construction Agreement.

2. Customer Submits Application. The Customer shall complete the Application and submit it to the Utility along with all required supplemental information which shall be noted on the Application form. A Utility may not charge an application fee unless a tariff containing such a fee is approved by the Commission.
3. Application is Received and is Complete or Incomplete. The Utility shall notify the Customer within seven calendar days of receipt of the Application as to whether it is complete or incomplete.
  - a. If the Application is incomplete, the Utility shall specify what information or material is necessary to complete the Application.
  - b. The Customer has 30 calendar days after receipt of such notification to submit the required information or materials (or request an extension), or the Application may be considered withdrawn.
4. Utility Reviews Application. Within 20 calendar days following the receipt of a complete Application, the Utility shall review the proposed Interconnection and notify the Customer of one of the following determinations:
  - a. The proposed Generating Facility design appears to meet all Interconnection requirements and the Application is approved as submitted. The Utility shall prepare an Interconnection Agreement and forward it to the Customer for review and signature in accordance with Step (5) below; or
  - b. The proposed Generating Facility has failed to meet one or more of the screens, but the initial review indicates that Additional Review may enable the Utility to determine that the Generating Facility can be interconnected consistent with safety, reliability, and power quality. In such case, the Utility shall offer to perform additional review (typically about three hours of study) to determine whether minor modifications to the Distribution System (for example, changing meters, fuses, or relay settings) would enable the Interconnection to be made consistent with safety, reliability and power quality. The Utility shall provide to the Customer a non-binding, good faith estimate of the costs of such additional review, and/or such minor modifications. The Utility shall undertake the additional review or minor modifications only after the Customer consents to pay for the review and/or modifications. Such additional review

~~will take place within 21 calendar days after the Customer has submitted payment for the estimated costs; or~~

~~e. The proposed Generating Facility design has failed to meet one or more of the Interconnection requirements, and the Application is denied. The Utility shall provide an explanation of the reasons for the denial (in writing unless requested by the Customer), and specifies what additional information or modifications to the Generating Facility or Distribution System are required in order to obtain approval of the proposed design.~~

~~i. If the Application is denied, the Customer shall notify the Utility within 21 calendar days whether or not it wishes to proceed with the project. If the Customer does not wish to proceed with the project, or the Utility is not notified within the specified time-frame, the Application may be considered withdrawn. If the Customer wishes to proceed with the project, then a new Application shall be submitted to the Utility for review and processing (Step (1) above is re-initiated), along with any additional information and/or modifications to the Generating Facility;~~

~~ii. Alternatively, the Customer may request processing under Level 3 Study Track and shall provide any additional information requested by the Utility and necessary to process the request under Level 3 Study Track.~~

~~5. Interconnection Agreement. If the Generating Facility meets all of the applicable Interconnection requirements and the Application is approved, then:~~

~~a. The Utility shall send to the Customer the appropriate Interconnection Agreement for review and signature within 12 calendar days after providing notice of Application approval, or following receipt of any "as built" or final diagrams from the Customer;~~

~~b. The Customer shall review, sign, and return the Interconnection Agreement to the Utility;~~

~~c. The Customer shall complete installation of the Generating Facility within 180 calendar days after execution of the Interconnection Agreement, unless an installation schedule has been submitted with an alternative in-service date, or the parties have mutually agreed to an extension. The Utility has the right to terminate any Interconnection Agreement, and the Application may be considered withdrawn, in the event that this time frame is exceeded without extension.~~

~~6. Inspection and Testing. The Customer shall contact the Utility to schedule the Utility site inspection and witness of the testing of the protective devices. The Utility site inspection and witness of the testing of the protective devices will occur within 12 calendar days of the~~

~~Customer's request. The Utility may schedule metering replacement, if necessary, and labeling of Utility equipment to occur at the same time. A Utility may not charge for the initial site inspection unless a tariff containing such a fee is approved by the Commission.~~

~~a. The Utility shall perform the site inspection as arranged and verify that the Generating Facility, as best as can be determined, is in compliance with all applicable Interconnection and code requirements. At a minimum, the Utility shall verify the following:~~

~~i. An electrical permit and/or clearance has been issued by the authority having jurisdiction, if required;~~

~~ii. All Generating Facility equipment is properly labeled;~~

~~iii. The Generating Facility system layout is in accordance with the plant location and site plans submitted to the Utility;~~

~~iv. Generator nameplate ratings are consistent with the information submitted to the Utility;~~

~~v. The Utility has unrestricted 24-hour access to the Disconnect Switch (if required), and the switch meets all applicable requirements; and~~

~~vi. The Generating Facility is wired, as best as can be determined, in accordance with the electrical diagrams submitted to the Utility;~~

~~b. The Utility shall witness the required protective relay calibration and functional tests or accept a certified test report in lieu of witnessing the tests.~~

~~c. Before or at the time of the site inspection, the Utility shall:~~

~~i. Install appropriate metering if required;~~

~~ii. Label all Utility equipment; and~~

~~iii. Ensure that the Generating Facility is properly incorporated onto Utility operating maps and identified as a Backfeed source;~~

~~d. The Utility does not have the right to fail a site inspection in the event that any of the above three requirements (metering, Utility equipment labeling, and the identification of the Generating Facility on the operating maps) are not in place at the time of the site inspection. The Utility does have the right to fail any Generating Facility that does not meet the applicable Interconnection requirements, is not installed in accordance with the documentation submitted to the Utility, or as a result of any safety or protection violation.~~

~~e. Notification. The Utility shall determine whether or not the Generating Facility meets all applicable requirements following completion of the site inspection and upon receipt of all final~~

~~applicable signed Interconnection documents). The Utility shall provide the Customer oral notification within 24 hours and written notification within five calendar days that:~~

- ~~a. The Generating Facility is approved for parallel operation with the Distribution System per the agreed terms and conditions; or~~
- ~~b. The Generating Facility has failed to meet one or more of the applicable requirements or a safety or protection violation has been identified, and the Generating Facility is not approved for parallel operation. The Utility shall provide the reasons (in writing unless requested by the Customer) for not approving parallel operation. The Utility may take any reasonable steps (including locking open the Disconnect Switch) to prevent the Generating Facility from parallel operation. Operation of a Generating Facility in parallel without Utility approval may result in immediate termination of electric service to the Customer.~~

~~8. Corrections (if necessary). In the event that the Generating Facility does not pass each Utility site inspection:~~

- ~~a. The Customer may schedule a re-inspection after correcting any outstanding issues. The Utility shall re-inspect upon 12 calendar days notice from the Customer to verify that the deficiencies have been remedied. A Utility may not charge a fee for a re-inspection unless a tariff containing such a fee is approved by the Commission. Following any site re-inspection where the Utility approves parallel operation of the Generation Facility, the Utility shall provide to the Customer such oral notification within 24 hours and such written notification within five calendar days that the Generation Facility is approved for parallel operation.~~
- ~~b. If updated diagrams are required to reflect "as-built" conditions, the Customer must submit the updated diagrams to the Utility for review and approval within 12 calendar days following the site inspection. The Utility shall process and mail an amendment to the Interconnection Agreement within seven calendar days after acceptance of the revised diagrams for Customer review and signature.~~

~~D. Customer Time-frames. The Utility time-frames contained herein do not include the time for the Customer to execute agreements or submit needed documentation. If at any point in the Level 2 Fast Track process, the Customer does not submit requested materials necessary to process the Application, or submit applicable executable agreements within 30 calendar days, or request an extension, the Application may be considered withdrawn.~~

~~E. Fees for Level 2 Fast Track Additional Review. A Utility may not charge a fee for an additional review, unless a tariff containing the hourly rate for additional review is approved by the Commission. The Utility shall provide a non-binding good faith estimate of the fee for such additional review. The Customer shall submit a deposit for the estimated fee before the additional review will be initiated. In addition, the Customer shall have the responsibility for any costs of Utility facilities and equipment modifications necessary to accommodate the Customer's Interconnection.~~

**R14-2-2620. Level 3 Study Track**

- ~~A. Level 3 Study Track is to be used for all Generating Facilities that do not meet the screening requirements for Level 1 Super Fast Track or Level 2 Fast Track. It is an in-depth engineering review of whatever aspects of generator performance and/or grid interaction the Utility deems necessary to study. More details shall be available in each Interconnection Manual. No review of the Generating Facility's protection equipment is required for generators that are certified, although the Utility may study the interface between the Generating Facility and the Distribution System. The Generating Facility is required to meet applicable local electric codes and standards, as well as comply with all terms and conditions of the Interconnection Manual and Interconnection Agreement.~~
- ~~B. Nothing in these procedures shall preclude the Customer and Utility from mutually agreeing to different time frames or other procedures for the approval of interconnected operation of a Generating Facility, so long as the project progresses as agreed to by the parties.~~
- ~~C. The Level 3 Study Track steps are as follows:~~
- ~~1. Prior to Submitting Application. The Customer may contact the Utility at the conceptual stages of the design to discuss the proposed design, installation, and operation. Upon the Customer's request, the Utility shall meet with the Customer prior to submission of an Application.~~
  - ~~2. Customer Submits Application. The Customer shall complete~~[Utility reviews](#) ~~the Application and submit it to the Utility along with all required supplemental information which shall be noted on the Application form. A Utility may not charge an application fee, unless a tariff containing such a fee is approved by the Commission~~[documents](#).
  - ~~3. Application is Received and is Complete or Incomplete. The Utility shall notify the Customer within 12 calendar days of receipt of the Application, or transfer from Level 1 Super Fast Track or Level 2 Fast Track as to whether it is complete or incomplete.~~[A Generating Facility rated at 1 MW or greater nominal generator AC nameplate rating will require an Interconnection Study. The Interconnection Study will:](#)

- ~~a. If the Application is incomplete, the Utility shall specify what information or material is necessary to complete the Application.~~
  - ~~b. The Customer has 30 calendar days after receipt of such notification to submit the missing information or materials (or request an extension), or the Application may be considered withdrawn. Determine whether any modifications, upgrades, or additional facilities will be required for the Distribution System, and an estimate of the associated costs will be included;~~
  - ~~b. Be completed in no more than 120 days from the Study start date. If the Utility requires more than 120 days to complete the Study, the Utility shall communicate to the Customer the estimated time beyond the initial 120-day period; and~~
  - ~~c. After the Customer submits any missing information, the Utility has 12 calendar days to determine if the Application is complete or incomplete and notify the Customer. Determine any special technical requirements, the estimated cost of any related Utility upgrades, construction schedules, and other applicable schedules.~~
- ~~4. Utility Reviews Application. Within 12 calendar days following the receipt of a complete Application, the Utility shall review the proposed Interconnection and notify the Customer of one of the following determinations: Utility may charge costs for performing study and any additional reviews. Utility shall provide a non-binding good faith estimate of costs for performing study. If required, the Customer shall submit a deposit for the estimated fees and/or costs before a study or any additional review will be initiated.~~
  - ~~a. The proposed Generating Facility design appears to meet all of the applicable Interconnection requirements, and no further studies, special protective requirements, or system modifications are required. The Utility shall prepare an Interconnection Agreement and forward it to the Customer for review and signature in accordance with Step (40) below; or~~
  - ~~b. The Generating Facility cannot be interconnected without further information, data, engineering studies, or modifications to the Distribution System or Generating Facility. In this case, the Interconnection proceeds according to the following meeting and study process, as deemed necessary by the Utility. All itemized costs and timelines for the studies are to be disclosed and agreed upon by the Utility and Customer prior to the start of each one. In addition, all studies are to be made available to the Customer directly after their completion.~~
- ~~5. Scoping Meeting. This meeting is an initial review meeting between the Utility and the Customer, where the Customer provides a general overview of the proposed Generating Facility.~~

~~design and the Utility provides general information on system conditions at the proposed Point of Interconnection. This meeting also allows the Utility and the Customer to discuss which studies are needed. The Utility and the Customer will bring to the meeting personnel, including system engineers and other resources as may be reasonably required to accomplish the purpose of the meeting. This meeting shall be held within 12 calendar days after an Application is deemed complete unless other mutual agreements are made. The Customer will be responsible for costs associated with upgrading the Utility's Distribution System that are necessary to interconnect the Customer's Generating Facility.~~

~~6. Acknowledgement Letter. The Utility will provide an acknowledgement letter following the Scoping Meeting upon request from the Customer. The letter will describe the project scope and include a good faith cost estimate by the Utility. If requested, the letter will be sent out within 12 calendar days following the Scoping Meeting.~~

~~7. Feasibility Study. If requested by the Customer, the Utility shall undertake a Feasibility Study. The Utility shall provide the Customer, within 12 calendar days after the Scoping Meeting, a Feasibility Study agreement including an outline of the scope of the study and a non-binding, good faith, detailed estimate of the materials and labor costs to perform the study. The Utility shall conduct the Feasibility Study after the Customer executes the Feasibility Study agreement, provides all requested Customer information necessary to complete the Feasibility Study, and pays the estimated costs.~~

~~a. The Feasibility Study shall be completed within 21 calendar days, unless other mutually agreeable terms are made.~~

~~b. The Feasibility Study will review short-circuit currents including contribution from the proposed generator as well as coordination of and potential overloading of distribution circuit protection devices. This study principally benefits the Customer by providing initial details and ideas on the complexity and likely costs to interconnect prior to commitment of costly engineering review. The Feasibility Study may also be used to focus or eliminate some or all of the more intensive System Impact study.~~

~~8. System Impact Study. If deemed necessary by either party, the Utility shall undertake a System Impact Study. The Utility shall provide the Customer, within 20 calendar days after completing the previous study or meeting, a System Impact Study agreement including an outline of the scope of the study and a non-binding, good faith, detailed estimate of the materials and labor costs to~~

~~perform the study. The Utility shall conduct the System Impact Study after the Customer executes the System Impact Study agreement, provides all requested Customer information necessary to complete the System Impact Study, and pays any required deposit of the estimated costs.~~

~~a. The System Impact Study will be completed within 30 calendar days, unless other mutually agreeable terms are made.~~

~~b. The System Impact Study reveals all areas where the Distribution System would need to be upgraded to allow the Generating Facility to be built and interconnected as designed. It may include discussions with the Customer about potential alterations to generator design, including downsizing to limit grid impacts.~~

~~c. If the Utility determines, in accordance with Good Utility Practice, that the Distribution System modifications required to accommodate the proposed Interconnection are not substantial, the System Impact Study shall identify the scope and detailed cost of the modifications.~~

~~d. If the Utility determines, in accordance with Good Utility Practice, that the system modifications to the Distribution System are substantial, a Facilities Study shall be performed.~~

~~e. Each Utility shall include in its Interconnection Manual a description of the various elements of a System Impact Study it would typically undertake pursuant to this Section including:~~

~~i. Load Flow Study;~~

~~ii. Short-Circuit Study;~~

~~iii. Circuit Protection and Coordination Study;~~

~~iv. Impact on System Operation;~~

~~v. Stability Study (and the conditions that would justify including this element in the Impact Study); and~~

~~vi. Voltage Collapse Study (and the conditions that would justify including this element in the Impact Study).~~

~~9. Facilities Study. The Utility shall undertake a Facilities Study if needed based on the outcome of the System Impact Study. The Utility shall provide the Customer, within seven calendar days after completing the previous study or meeting, a Facilities Study agreement including an outline of the scope of the study and a non-binding, good faith, detailed estimate of the materials and labor cost to perform the study. The Utility shall conduct the Facilities Study after the Customer executes the~~

~~Facilities Study agreement, provides all requested Customer information necessary to complete the study, and pays the estimated costs.~~

- ~~a. The Facilities Study shall be completed within 30 calendar days, unless other mutually agreeable terms are made.~~
- ~~b. The Facilities Study delineates the detailed costs of construction and milestones. Construction may include new circuit breakers, relocation of reclosers, new Utility grid extensions, reconductoring lines, new transformers, protection requirements and interaction.~~

~~10. Interconnection Agreement. If the Generating Facility meets all of the applicable Interconnection requirements, all items identified in any meeting or study have been resolved and agreed to (if applicable), and the Utility has received the final design drawings, then:~~

- ~~a. The Utility shall send to the Customer within 12 calendar days an executable Interconnection Agreement, which shall include as an exhibit the cost for any required Distribution System modifications.~~
- ~~b. The Customer shall review, sign, and return the Interconnection Agreement and any balance due for Interconnection studies or required deposit for facilities.~~
- ~~c. The Customer shall then complete installation of the Generating Facility and the Utility shall complete any Distribution System modifications, according to the milestones set forth in the Interconnection Agreement. The Utility shall employ best reasonable efforts to complete such system upgrades in the shortest time practical.~~

~~11. Inspection and Testing. The Customer shall contact the Utility to schedule the Utility site inspection and witness of the testing of the protective devices. The Utility site inspection and witness of the testing of the protective devices shall occur within 12 calendar days of notice from the Customer. The Utility may schedule metering replacement, if necessary, and labeling of Utility equipment to occur at the same time.~~

- ~~a. The Utility shall perform the site inspection and verify that the Generating Facility, as best as can be determined, is in compliance with all applicable Interconnection and code requirements. At a minimum, the Utility shall verify the following:~~
  - ~~i. An electrical permit and/or clearance has been issued by the authority having jurisdiction, if required;~~
  - ~~ii. All Generating Facility equipment is properly labeled;~~
  - ~~iii. Generating Facility system layout is in accordance with the plant location and site plans submitted to the Utility;~~

- ~~iv. Generator nameplate ratings are consistent with the information submitted to the Utility;~~
  - ~~v. The Utility has unrestricted access to the Disconnect Switch (if required), and the switch meets all requirements; and~~
  - ~~vi. The Generating Facility is wired, as best can be determined, in accordance with the electrical diagrams submitted to the Utility.~~
  - ~~b. The Utility shall witness the required protective relay calibration and functional tests. The Utility may accept a certified test report in lieu of witnessing the tests.~~
  - ~~c. The Utility shall:~~
    - ~~i. Install all appropriate metering, if required;~~
    - ~~ii. Label all Utility equipment; and~~
    - ~~iii. Ensure that Generating Facility is properly incorporated onto Utility operating maps and identified as a Backfeed source.~~
  - ~~d. The Utility may fail any Generating Facility that does not meet the applicable Interconnection requirements, is not installed in accordance with the documentation submitted to the Utility, or has any safety or protection violation.~~
- ~~12. Notification. Immediately following completion of the site inspection (and upon receipt of all final applicable signed Interconnection documents) the Utility shall determine whether or not the Generating Facility meets all applicable requirements. The Utility shall provide the Customer oral notification within 24 hours and written notification within five calendar days that:~~
- ~~a. The Generating Facility is approved for parallel operation with the Distribution System per the Interconnection Agreement; or~~
  - ~~b. The Generating Facility has failed to meet one or more of the applicable requirements or a safety violation has been identified, and the Generating Facility is not approved for parallel operation. The Utility shall provide the reasons (in writing unless otherwise requested by the Customer) for not approving parallel operation. The Utility may disconnect and lock out the Generating Facility to prevent the Generating Facility from parallel operation, and the Customer must reschedule the site inspection with the Utility. Operation of a Generating Facility in parallel without written approval from the Utility may result in immediate termination of electric service to the Customer.~~
- ~~13. Correction (if necessary). In the event that the Generating Facility does not pass the initial Utility site inspection:~~

- ~~a. The Customer may schedule a re-inspection after correcting the deficiencies identified by the Utility. The Utility shall re-inspect within 12 calendar days notice from the Customer to verify that the deficiencies have been remedied. Following any site re-inspection where the Utility approves parallel operation of the Generation Facility, the Utility shall provide to the Customer such oral notification within 24 hours and such written notification within five calendar days that the Generation Facility is approved for parallel operation.~~
- ~~b. If updated documentation is required to reflect “as built” conditions, the Customer must submit the updated documentation to the Utility for review and approval within 12 calendar days following the site inspection. The Utility may not charge a fee unless a tariff containing such a fee is approved by the Commission. The Utility shall process and mail an amendment to the Interconnection Agreement within seven calendar days after receipt and acceptance of the updated documentation for Customer review and signature.~~

~~D. Customer Time-frames. The Utility time-frames contained herein do not include the time for the Customer to execute agreements or submit needed documentation. If at any point in the Level 3 Study Track process, the Customer does not submit requested materials necessary to process the Application or applicable executable agreements within 30 calendar days, or request an extension, the Application may be considered withdrawn.~~

~~E. Fees for Level 3 Study Track Interconnection. A Utility may not charge a fee for an engineering review, unless a tariff containing the hourly rate for engineering review is approved by the Commission. The Utility shall provide a non-binding good faith estimate of the fee for such engineering review. The Customer must submit a deposit for the estimated fee before the engineering review will be initiated. In addition, costs for Utility facilities and/or equipment modifications necessary to accommodate the Generating Facility's Interconnection will be the responsibility of the Customer. The Customer may not be charged for the review of a certified generator's protection equipment. The Utility may not charge a fee for an initial inspection or for a re-inspection, unless a tariff containing such a fee is approved by the Commission.~~

**R14-2-2621. Interconnection to a Secondary Spot Network System**

- A. The requirements for interconnecting a Generating Facility to a Secondary Spot Network System are different than those for Interconnection to radial distribution systems. In the Secondary Spot Network System, there are technical requirements to be considered particularly with the design and operational aspects of network protectors that are not required on radial systems.**
- B. The Generating Facility must meet all of the following conditions:**

1. Be less than 10 kW; ~~unless otherwise specified in the serving Utility's Interconnection Manual;~~  
~~and~~
  2. Qualify as Certified Equipment; ~~and,~~
  - ~~3. Be less than or equal to 10% of the Customer's verifiable minimum load during the operation of the inverter. (For photovoltaics, the minimum load refers to the daytime minimum.)~~
- C. The process for interconnecting to a Secondary Spot Network System will be determined by the Utility.

**R14-2-2622. Utility Reporting Requirements**

~~A. Interconnection Manual. Each Utility shall file an Interconnection Manual for approval with the Commission no later than 90 calendar days after adoption of this Article. An updated Interconnection Manual shall be provided to the Commission upon any substantive revision by the Utility and shall become effective within 60 days unless otherwise acted upon by the Commission.~~**B.**

Documentation of Projects. Each Utility shall maintain records concerning each Application received for Interconnection and parallel operation of Distributed Generation. Such records shall include the date each Application is received, documents generated in the course of processing each Application, correspondence regarding each Application, the final disposition of each Application, and the date on which the Application was approved (if approved).

**EB.** Annual Interconnection Report to the Commission. By March 30 of each year, each Utility shall file with the Commission a Distributed Generation Interconnection report for the preceding calendar year that lists the new Generating Facilities interconnected with the Distribution System since the previous year's report, any Distributed Generation facilities no longer interconnected with the Distribution system since the previous report, and the capacity of each Generating Facility. The annual report shall include, for the reporting period, a summary of the number of complete Applications received, the number of complete Applications approved, the number of complete Applications denied by level, and the reasons for denial. The annual report shall also include a list of special contracts, approved by the Commission during the reporting period, that provide discounted rates to consumers as an alternative to self-generation.

**R14-2-26XX. Disconnect Switch Requirements**

A. Customer shall install and maintain a visual-open, manually operated, load break Disconnect Switch that will completely open and isolate all ungrounded conductors of Customer's Generating Facility from the Utility's Distribution System. For multi-phase systems, the Disconnect Switch shall be

gang-operated. Additional requirements shall be specified by the serving Utility's Interconnection Manual.

**R14-2-26XX. Energy Storage Systems General Requirements**

- A. All Energy Storage Systems shall meet all applicable codes and standards in accordance with Section R14-2-2613 of these Interconnection Rules.
- B. These rules apply to Energy Storage Systems owned by a Customer or third party.
- C. Energy Storage Systems owned, operated and maintained by the Utility shall be installed in accordance with the Utilities Interconnection Manual and are exempt from these rules.
- D. Energy Storage Systems connecting behind a Customer's meter for the purposes of peak shaving and/or back up Customer load will follow the Application Process outlined in Section R14-2-2618 and the Utility's Interconnection Manual.
- E. Energy Storage Systems connecting directly to the Utility's Distribution System and not installed behind a Customer's meter for the purpose of providing ancillary services and/or capacity support will be subject to the Utility's Interconnection Study and Application process irrespective of AC Output rating and time frames for review.
- F. At a minimum, the following grid support features are required at the Point of Interconnection for Energy Storage Systems connecting directly to the Utility's Distribution System unless otherwise agreed to by the host Utility:
  - 1. Capability to operate in Power Factor Control ("PFC") mode at a fixed power factor within the range of plus or minus 0.95 pf at any power output level up to the maximum rated kW output of the Generating Facility.
  - 2. Capability to operate at any fixed reactive power ("kVAR") output at any power level within the full reactive power range calculated in (1) above while the Generating Facility is producing power.
  - 3. Capability to operate in Automatic Voltage Regulating ("AVR") mode to regulate the voltage to a selected voltage set point within a voltage range of 0.95 pu to 1.05 pu, to the extent that such voltage regulation can be achieved with the available reactive power calculated in Section (F1). Voltage regulation shall be within 0.50% of the voltage set point.

**R14-2-26XX. Advanced Inverter Requirements**

- A. All interconnected systems utilizing inverter based technology at the AC output range from 1kW to 10MW level shall be capable of advanced grid support features through advanced inverter

functionality. These systems will be interconnected following the Application Process outlined in Section R14-2-2618 and the Utility's Interconnection Manual.

B. Programming/setpoints shall be set in accordance with and subject to the Utility requirements and shall be monitored by the Utility.

C. At a minimum, the following grid support features are required unless otherwise specified by the Utility's Interconnection Manual:

1. Volt/Var Mode – Provide volt/var control through dynamic reactive power injection through autonomous responses to local voltage measurement
2. Fixed Power Factor – Provide reactive power by a fixed power factor
3. Anti-islanding – Support anti-islanding to trip off under extended anomalous conditions
4. Low/High Voltage Ride-through (LHVRT) – Provide ride-through of low/high voltage excursions beyond normal limits
5. Low/High Frequency ride-through (LHFRT) – Provide ride-through of low/high frequency excursions beyond normal limits
6. Ramping
7. Soft-Start Reconnection – Reconnect after grid power is restored
8. Remote ON/OFF
9. Power Curtailment – 0% to 100%

# EXHIBIT B

TITLE 14. PUBLIC SERVICE CORPORATIONS; CORPORATIONS AND ASSOCIATIONS; SECURITIES REGULATION

CHAPTER 2. CORPORATION COMMISSION

FIXED UTILITIES

**ARTICLE 26. INTERCONNECTION OF DISTRIBUTED GENERATION FACILITIES**

- R14-2-2601. Definitions
- R14-2-2602. Applicability
- R14-2-2604. Customer Rights and Responsibilities
- R14-2-2605. Utility Rights and Responsibilities
- R14-2-2606. Easements and Rights-of-Way
- R14-2-2607. Insurance
- R14-2-2608. Non-Circumvention
- R14-2-2609. Designation of Contact Persons
- R14-2-2610. Non-discrimination
- R14-2-2611. Application Submission Requirements
- R14-2-2612. Minor Modifications
- R14-2-2613. Certification
- R14-2-2614. No Additional Requirements
- R14-2-2615. Disconnection from or Reconnection with the Distribution System
- R14-2-2617. System Requirements
- R14-2-2618. Application Process for a Generating Facility less than 1MW
- R14-2-2619. Application Process for a Generating Facility 1MW and Greater
- R14-2-2621. Interconnection to a Secondary Spot Network System
- R14-2-2622. Utility Reporting Requirements
- R14-2-26XX. Disconnect Switch Requirements
- R14-2-26XX. Battery/Energy Storage General Requirements
- R14-2-26XX. Advanced Inverter Requirements

**R14-2-2601. Definitions**

In this Article, unless otherwise specified:

1. "AC" means alternating current.
2. "ANSI" means American National Standards Institute.
3. "Application" means the standard form for applying to interconnect a Generating Facility with the Distribution System.
4. "Commission" means the Arizona Corporation Commission.
5. "Backfeed" means to energize a section of a Utility electric system that is supplied from a source other than its normal source.
6. "Business Day" means Monday through Friday, excluding federal and Arizona state holidays.
7. "Certified Equipment" means a specific generating and protective equipment system or systems that have been certified as meeting the requirements in R14-2-2613 relating to testing, operation, safety, and reliability by an entity approved by the Commission.
- XX"Clearance" means a statement, with documentation, from the Utility that said line or equipment is disconnected from all known sources of power and tagged, and that for safety purposes all proper precautionary measures have been taken and those workmen may proceed to inspect, test, and install grounds on the circuit.
8. "CFR" means Code of Federal Regulations.
9. "Customer" means an electric consumer that generates electricity on the consumer's side of the Utility meter.
10. "DC" means direct current.
11. "Disconnect Switch" means a device that the Customer is required to install and maintain that is a visible open, manual, gang-operated, load break disconnect device, capable of being locked in a visible open position by a standard Utility padlock that will completely isolate the Customer's Generating Facility from the Utility grid. If the voltage is over 500 volts, it must be capable of being grounded on the Utility side.
12. "Distributed Generation" means any type of Customer electrical generator, static inverter, or Generating Facility interconnected with the Distribution System that either has the capability of being operated in electrical parallel with the Distribution System or can feed a Customer load that can also be fed by the Distribution System.
13. "Distribution System" means the infrastructure constructed, maintained, and operated by a Utility to deliver electric service at the distribution level (21 kV or less) to retail consumers.

14. "Facilities Study" means a comprehensive analysis of the actual construction needed to take place based on the outcome of the System Impact Study.
15. "Fault Current" means the level of current that can flow if a short circuit is applied to a voltage source.
16. "Feasibility Study" means a preliminary review of the potential impacts on the Distribution System that will result from the proposed Interconnection.
17. "Generating Facility" means all or part of the Customer's electrical generator or inverter together with all protective, safety, and associated equipment necessary to produce electric power at the Customer's facility. A Generating Facility also includes any QF.
18. "Good Utility Practice" means any of the practices, methods, and acts engaged in or approved by a significant portion of the electric industry during the relevant time period, or any of the practices, methods, and acts which, in the exercise of reasonable judgment in light of the facts known at the time the decision was made, could have been expected to accomplish the desired result at a reasonable cost consistent with good business practices, reliability, safety, and expedition. Good Utility Practice is not intended to be limited to the optimum practice, method, or act to the exclusion of all others, but rather to be acceptable practices, methods, or acts generally accepted in the region.
19. "IEEE" means The Institute of Electrical and Electronic Engineers.
20. "Interconnection Agreement" means an agreement, together with appendices, signed between the Utility and the Customer, covering the terms and conditions governing the Interconnection and operation of the Generating Facility with the Utility.
21. "Interconnection" means the physical connection of a Generating Facility to the Distribution System.
22. "Interconnection Manual" means a separate document developed and maintained by each Utility, made available on each Utility's web site containing detailed technical, safety, and protection requirements necessary to interconnect a Generating Facility to the Distribution System.
23. "Interconnection Study" means a study that may be undertaken by a Utility (or a Utility-designated third party) in response to its receipt of a completed Application. An Interconnection Study may include, but not be limited to, a Feasibility Study, a System Impact Study, and a Facilities Study.
24. "Island" means a condition in which a portion of the Utility's Distribution System is energized solely by one or more local electric power systems throughout the associated Point of

Interconnection while that portion of the Utility's Distribution System is electrically separated from the rest of the Utility's Distribution System. An Island can be either intentional (planned) or unintentional (unplanned).

25. "kW" means kilowatt.
26. "MW" means megawatt.
27. "NEMA" means the National Electrical Manufacturers Association.
28. "NFPA" means the National Fire Protection Association.
29. "NRTL" means a Nationally Recognized Testing Laboratory.
30. "Parallel System" means the operation of a Generating Facility that is electrically interconnected to a bus common with the Distribution System, either on a momentary or continuous basis.
31. "Point of Interconnection" means the physical location where the Utility's service conductors are connected to the Customer's service conductors to allow parallel operation of the Generating Facility with the Distribution System.
32. "QF" means Qualifying Facility, any cogeneration or small power production facility that meets the criteria for size, fuel use, efficiency, and ownership as promulgated in 18 CFR, Chapter I, Part 292, Subpart B of the Federal Energy Regulatory Commission's Regulations.
34. "Relay" means an electric device that is designed to interpret input conditions in a prescribed manner and after specified conditions are met to respond to cause contact operation or similar abrupt change in associated electric control circuits.
35. "Secondary Spot Network System" means an AC power Distribution System in which a Customer is simultaneously served from three-phase, four-wire low-voltage (typically 480V) circuits supplied by two or more network transformers whose low-voltage terminals are connected to the low-voltage circuits through network protectors. The low voltage circuits do not have ties to adjacent or nearby secondary network systems. The Secondary Spot Network System has two or more high-voltage primary feeders. These primary feeders are either dedicated network feeders that serve only other network transformers, or a non-dedicated network feeder that serves radial transformers in addition to the network transformer, depending on network size and design. The system includes automatic protective devices and fuses intended to isolate faulted primary feeders, network transformers, or low-voltage cable sections while maintaining uninterrupted service to the consumers served from the low-voltage circuits.
37. "System Impact Study" means a full engineering review of all aspects of the Generating Facility's impact on the Distribution System, including power flow, Utility system protective

device coordination, generator protection schemes (if not certified), stability, voltage collapse, frequency impacts, and short circuit duty.

38. "UL" means Underwriters Laboratories Inc.

39. "Utility" means an electric power company that constructs, operates, and maintains its Distribution System for the receipt and/or delivery of electric power.

**R14-2-2602. Applicability**

**A. These regulations:**

1. Apply to any Generating Facility with a power rating of up to 10 MW at the discretion of the serving Utility and as specified in the serving Utility's Interconnection Manual, operating (or applying to operate) in parallel with the Utility's Distribution System; and
2. Establish procedural requirements, terms, and conditions to promote the safe and effective parallel operation of a Generating Facility with the Distribution System.

**B. The total capacity of an individual Generating Facility may exceed 10 MW; however, these rules do not apply to any Utility Scale power plants or any proposed rotating machines. Generating Facility system size connected to the Distribution System shall be determined by the serving Utility.**

**C. The electric rates and schedules, terms and conditions of service, or other contract provisions governing the electric power sold by a Utility to an Arizona retail consumer are subject to the jurisdiction of the Commission. The Commission also has jurisdiction when the Utility purchases excess power from a QF under 18 CFR 292.303 and 18 CFR 292.306 (2004).**

**D. The Utility has specific Interconnection, contractual, and inspection requirements that must be complied with and information that needs to be submitted for all interconnected Generating Facilities. These may include protective relaying, metering, special rate schedules, applicable safety devices, and information requirements as specified in the Interconnection Manual.**

**E The Federal Energy Regulatory Commission has jurisdiction over an Interconnection with facilities that are subject to the Utility's Open Access Transmission Tariff.**

**R14-2-2604. Customer Rights and Responsibilities**

**A. A Customer has the right to submit an Application to interconnect a Generating Facility with the Distribution System. The Customer has the right to expect reasonable and professional responses from the Utility during the Interconnection process. The Customer has the right to expect reasonable cost estimates, outlines of the proposed work, supporting data, and justification for proposed work before the Utility undertakes any studies or system upgrades to accommodate the Generating Facility.**

- B.** The Customer has the responsibility of disclosing to the Utility items specified herein on the Generating Facility and its operation. The Customer also has the responsibility of ensuring that:
1. The Generating Facility meets all interconnection, safety and protection requirements outlined in these provisions and the Utility's Interconnection Manual;
  2. The Generating Facility meets all applicable construction codes, safety codes, electric codes, laws, and requirements of government agencies having jurisdiction;
  3. All the necessary protection equipment is installed and operated to protect the Generating Facility, Utility personnel, the public, and the Distribution System;
  4. The Generating Facility design, installation, maintenance, and operation reasonably minimizes the likelihood of causing a malfunction or other disturbance, damaging, or otherwise impairing the Distribution System;
  5. The Generating Facility does not adversely affect the quality of service to other consumers (but no more or less than the present standard of care observed by regular Utility/consumer connections);
  6. The Generating Facility does not hamper efforts to restore a feeder to service (specifically when a clearance is required);
  7. The Generating Facility is maintained in accordance with applicable manufacturers' maintenance schedule; and
  8. The Utility is notified of any emergency or hazardous condition or occurrence with the Generating Facility, which could affect safe operation of the Distribution System.
- C.** The Customer is responsible for all Interconnection facilities required to be installed to interconnect the Generating Facility to the Distribution System. These include connection, transformation, switching, protective relaying, metering and safety equipment, and any other requirements as outlined in this Article and as specified by the Utility. All such Interconnection facilities are to be installed by the Customer at its sole expense.
- D.** The Customer, or Customer's agent, shall own and be responsible for designing, installing, operating and maintaining control and protective devices, in addition to minimum protective devices and relays specified in the Utility's Interconnection Manual, to protect its facilities from abnormal operating conditions such as, but not limited to, electric overloading, abnormal voltages, and Fault Currents. Such protective devices must promptly disconnect the Generating Facility from the Distribution System in the event of a power outage on the Distribution System. The Customer shall also own and be responsible for designing, installing, operating and maintaining Interconnection

facilities on the Customer's premises as may be required to deliver power from the Generating Facility to the Distribution System at the Point of Interconnection.

E. In the event that additional facilities are required to be installed on the Distribution System to accommodate the Customer's generation, the Utility will install such facilities at the Customer's expense, including administrative costs. The Utility shall provide notice to the Customer of intent to install such facilities during the Interconnection Study process.

F. Customers interconnecting a Generating Facility with the Utility system shall:

1. Sign an Interconnection Agreement, and all other applicable purchase, supply, and standby agreements; and
2. Comply with all applicable tariffs, rate schedules and Utility service requirements.

**R14-2-2605. Utility Rights and Responsibilities**

A. The Utility will specify its rights and responsibilities for interconnecting Generating Facilities to the Utility's Distribution System, subject to the requirements set forth in each Utility's Interconnection Manual.

B. The Utility has the right to expect reasonable and professional responses from the Customer during the Interconnection process.

C. Because the Utility is required to safeguard its system, other consumers, and the general public, the Utility has the right and responsibility to require that an interconnected Generating Facility:

1. Will not present any hazards to Utility personnel, other consumers or the public;
2. Minimize the possibility of damage to Utility and other consumers' equipment;
3. Not adversely affect the quality of service to other consumers; and
4. Not hamper efforts to restore a feeder to service (specifically when a Clearance is required).

D. The Utility will notify the Customer if there is reason to believe that the Customer's Generating Facility operation causes disruption or deterioration of service to other consumers served from the Distribution System or if such operation causes damage to the Distribution system.

E. The Utility has the responsibility to make its Interconnection Manual, standard Application forms and Interconnection Agreements readily available to Customers in print and online formats.

F. Following the receipt of Customers completed Application, the Utility may perform an engineering review to determine if an Interconnection Study is required. As part of the Interconnection Study process, the Utility has the responsibility to provide a detailed cost estimate, outline of the proposed work, supporting data, and justification for the proposed work. The Interconnection Study

determines whether any additional facilities will be required to be installed to the Utility's Distribution System. The Interconnection Study will also provide estimated cost.

- G.** Utility cannot charge a Customer for planned facility upgrades except that Applications can be rejected in instances where reliability or safety would be further compromised by a Distributed Generation installation. A Utility shall not charge a Generating Facility Customer differently than any other consumer for facility upgrades in accordance with generally applicable Commission-approved tariffs.

**R14-2-2606. Easements and Rights-of-Way**

Utility Right to Access Utility-Owned Facilities and Equipment. Where an easement or right-of-way does not exist, but is required by the Utility to accommodate the Interconnection, the Customer must provide suitable easements or rights-of-way, in the Utility's name, on the premises owned, leased, or otherwise controlled by the Customer. If the required easement or right-of-way is on another's property, the Customer must obtain and provide to the Utility a suitable easement or right-of-way, in the Utility's name, at the Customer's sole cost, and in sufficient time to comply with the Interconnection Agreement requirements. The Utility shall use reasonable efforts to utilize existing easements to accommodate the Interconnection, and shall use reasonable efforts to assist the Customer in securing necessary easements (at the Customer's expense) that do not exist but are necessary to accommodate the Interconnection.

**R14-2-2607. Insurance**

- A.** Insurance requirements shall be specified in the Utility's Interconnection Manual. The Customer may be required to provide general liability insurance coverage as a condition for Interconnection based on system size and technology. Due to the risk of incurring damages, it is recommended that every Interconnection Customer protect itself with insurance or other suitable financial instrument sufficient to meet its construction, operating, and liability responsibilities. At no time shall the Utility require that the Customer negotiate any policy or renewal of any policy covering any liability through a particular insurance provider, agent, solicitor, or broker.
- B.** The inability of the Utility to require the Customer to provide general liability insurance coverage for operation of the Generating Facility is not a waiver of any rights the Utility may have to pursue remedies at law against the Customer to recover damages.

**R14-2-2608. Non-Circumvention**

Utility and its affiliates shall not use knowledge of proposed Distributed Generation projects submitted to it for Interconnection or study to initiate competing proposals to the Customer that offer either discounted rates in return for not installing the Distributed Generation, or offer competing Distributed

Generation projects. Customers are not precluded from sharing information in their possession regarding a potential Distributed Generation project with a Utility or its affiliates, or from using information regarding a potential Distributed Generation project to negotiate a discounted rate or other mutually beneficial arrangement with a Utility or its affiliates. The Utility shall be permitted to inform the Customer of existing or pending (awaiting approval by the Commission) rate schedules that may economically benefit, economically disadvantage, or otherwise affect the Customer's project.

**R14-2-2609. Designation of Contact Persons**

- A.** Each Utility shall designate a person or persons to serve as the Utility's contact for all matters related to Distributed Generation Interconnection; identify to the Commission its Distributed Generation contact person; and provide convenient access through its web site to the telephone numbers, mailing addresses and electronic mail addresses for its Distributed Generation contact person or persons.
- B.** Each Customer applying for Interconnection shall designate a contact person or persons, and provide to the Utility the contact's name, telephone number, mailing address, and electronic mail addresses.

**R14-2-2610. Non-discrimination**

All Applications for Interconnection and parallel operation of Distributed Generation shall be processed by the Utility in a non-discriminatory manner.

**R14-2-2611. Application Submission Requirements**

The Utility may require additional documentation be submitted with the Application. Each Utility's Application form shall specify what additional documentation is required. Additional documentation may include an electrical one-line diagram, an electrical three-line diagram, AC and DC control schematics, plant location diagram, and site plan. Upon request, the Utility shall provide the Customer with sample diagrams that indicate the preferred level of detail and type of information required for a typical inverter-based system.

**R14-2-2612. Minor Modifications**

It is recognized that certain Applications may require minor modifications to the Generating Facility or the Application while they are being reviewed by the Utility. A pending Application requiring minor modifications may be considered incomplete and treated as a new or separate Application.

**R14-2-2613 Certification**

In order to qualify as Certified Equipment for any Interconnection procedures, relevant equipment must comply with applicable codes, guides, and standards.

- B. In order to qualify as Certified Equipment, Generating Facility equipment proposed for use separately or packaged with other equipment in an Interconnection system must comply with the following requirements:**
1. It has been tested in accordance with industry standards for continuous utility interactive operation in compliance with the appropriate codes and standards by any NRTL recognized by the U. S. Occupational Safety and Health Administration to test and certify Interconnection equipment pursuant to the relevant codes and standards;
  2. It has been labeled and is publicly listed by such NRTL at the time of the Interconnection Application; and
  3. Such NRTL makes readily available for verification all test standards and procedures it utilized in performing such equipment certification, and, with Customer approval, the test data itself. The NRTL may make such information available on its web site and by encouraging such information to be included in the manufacturer's literature accompanying the equipment.
- C. The Customer must verify that the intended use of the equipment falls within the use or uses for which the equipment was tested, labeled, and listed by the NRTL.**
- D. Nothing herein shall preclude the need for project Interconnection review and approval by the Utility or on-site commissioning testing prior to the Interconnection nor follow-up production testing by the NRTL.**
- E. If the Certified Equipment includes only interface components (switchgear, inverters, or other interface devices), then a Customer must show, upon request from the serving Utility, that the Generating Facility is compatible with the interface components and is consistent with the testing and listing specified for this type of Interconnection equipment.**
- F. Certified Equipment does not include equipment provided by the Utility.**

**R14-2-2614. No Additional Requirements**

If a Generating Facility complies with all applicable requirements, a Utility may not require the Customer to install additional controls, or perform or pay for additional tests, in order to obtain approval to interconnect except as mutually agreed to by the parties or required by the Commission. Additional equipment may be installed by the Utility at its own expense.

**R14-2-2615 Disconnection from or Reconnection with the Distribution System**

- A. A Utility may disconnect a Generating Facility from the Distribution System under the following conditions:**

1. Expiration or termination of Interconnection Agreement. The Interconnection Agreement specifies the effective term and termination rights of the Utility and the Customer. Upon expiration or termination of the Interconnection Agreement with a Customer, in accordance with the terms of the agreement, the Utility may disconnect a Generating Facility.
  2. Non-compliance with technical Interconnection requirements. A Utility may disconnect a Generating Facility if the facility is not in compliance with the technical requirements. Within ten (10) Business Days from the time the Customer notifies the Utility that the Generating Facility has been restored to compliance with the technical requirements, the Utility shall have an inspector verify such compliance. Upon such verification, the Customer in coordination with the Utility may reconnect the facility.
  3. System emergency. A Utility may temporarily disconnect a Generating Facility without prior written notice in cases where continued Interconnection of the Generating Facility will endanger system operations, persons or property. During the forced outage of a Distribution System, the Utility may temporarily disconnect a Generating Facility to make immediate repairs on the Distribution System. If the Utility determines that the Generating Facility caused the system emergency, Customer shall be fully responsible for the costs of Distribution System upgrades and repairs. When possible, the Utility shall provide the Customer with reasonable notice. The Utility shall reconnect the Generating Facility as quickly as practical, and after the Utility's determination that the Generating Facility's operations have been mitigated to the Utility's satisfaction
  4. Routine maintenance, repairs, and modifications. A Utility may disconnect a Generating Facility from the Distribution System with reasonable prior notice of a service interruption for routine maintenance, repairs, and system modifications. The Utility shall allow reconnection of the Generating Facility as quickly as practical following any such service interruption.
  5. Absence of executed Interconnection Agreement. In order to interconnect a Generating Facility to a Distribution System, the Customer and the Utility must execute an Interconnection Agreement. The Utility may refuse to connect or may disconnect the Generating Facility if an executed Interconnection Agreement is not in effect.
- B.** The parties shall cooperate with each other to restore the Generating Facility and the Distribution System to their normal operating state as soon as practical.

- C. Temporary disconnection by Customer. The Customer may temporarily disconnect its Generating Facility from the Distribution System at any time. Such temporary disconnection shall not be a termination of the Interconnection Agreement unless specified as such.
- D. Agreement survival rights. The Interconnection Agreement between the Utility and the Customer shall continue in effect after disconnection or termination of electric service to the extent necessary to allow or require either party to fulfill rights or obligations that arose under the agreement notwithstanding the items in Section E(4) below.
- E. Duration and Termination of the Interconnection Agreement. The Interconnection Agreement shall become effective on the effective date specified in the agreement and shall remain in effect thereafter unless and until:
1. It is terminated by mutual agreement of the parties;
  2. It is replaced by another Interconnection Agreement with mutual consent of the parties;
  3. It is terminated by either party pursuant to a breach or default of the agreement; or
  4. The Customer terminates its Utility electric service and/or vacates or abandons the property on which the Generating Facility is located, or the Generating Facility, without mutual agreement of the parties.
- F. Upon termination of the Interconnection Agreement, the Customer shall be responsible for ensuring that the electrical conductors connecting the Generating Facility to the Distribution System are immediately lifted and permanently removed, so as to preclude any possibility of interconnected operation in the future. The Utility may inspect the Generating Facility to verify that it is permanently disconnected.

**R14-2-2617. System Requirements**

- A. For Interconnection of a proposed Generating Facility to a non-network distribution circuit, the aggregated generation, including the proposed Generating Facility, on the circuit will not exceed 15% of the total circuit annual peak load as most recently measured at the substation or on a line section unless otherwise determined by the serving Utility. In the case of generators certified to UL 1741 and IEEE 1547, a line section is that portion of a Distribution System connected to a Generating Facility bounded by automatic sectionalizing devices, or the end of the distribution line. The aggregated generation, including the proposed Generating Facility, must also be less than 50% of the minimum daytime feeder or line section load unless otherwise determined by the serving Utility, where these data are available, unless the minimum load is zero.

- B.** The proposed Generating Facility will not contribute more than 10% to the distribution circuit's maximum Fault Current at any point on the Distribution System, including normal contingency conditions that may occur due to reconfiguration of the feeder or the distribution substation.
- C.** The proposed Generating Facility, in aggregate with other generation on the distribution circuit, will not cause any distribution protective devices and equipment (including but not limited to substation breakers, fuse cutouts, and line reclosers), or consumer equipment on the system, to exceed 90% of the short circuit interrupting capability; nor is the Interconnection proposed for a circuit that already exceeds 90% of the short circuit interrupting capability.
- D.** The proposed Generating Facility is interconnected to the Utility as shown in the table below:

<u>Primary distribution line configuration</u>	<u>Interconnection to primary distribution line</u>
<u>Three-phase, four wire</u>	<u>If a three-phase (effectively grounded) or single-phase generator, Interconnection must be line-to-neutral</u>

- E.** If the proposed Generating Facility is to be interconnected on single-phase shared secondary, the aggregate generation capacity on the shared secondary, including the proposed Generating Facility, cannot exceed 10 kW, and the proposed generator must be listed to UL 1741.
- F.** If the proposed Generating Facility is single-phase and is to be interconnected on a transformer center tap neutral of a 240 volt service, its addition will not create an imbalance between the two sides of the 240 volt service of more than 20% of nameplate rating of the service transformer.
- G.** The proposed Generating Facility, in aggregate with other generation interconnected to the distribution low voltage side of the substation transformer feeding the distribution circuit where the generator proposes to interconnect, will not exceed 10 MW in an area where there are known or posted transient stability limitations to generating units located in the general electrical vicinity (e.g., three or four transmission voltage level (69 kV or higher) busses from the Point of Interconnection).
- H.** The proposed Generating Facility's Point of Interconnection will not be on a transmission (69 kV or higher) line.
- I.** The proposed Generating Facility cannot exceed the capacity of the Customer's existing electrical service.

**R14-2-2618. Application Process for a Generating Facility Less Than 1 Megawatt (MW)**

- A.** The Application process for a Generating Facility Less Than 1 MW is available to Customers interconnecting an inverter-based Generating Facility that is more than 1 kW and less than 1 MW to

the Distribution System. The inverters must meet current applicable codes and standards, including UL 1741 listed, and certified to meet the shutdown protective functions (under/over voltage, under/over frequency and anti-islanding) specified in IEEE 1547 or equivalent standard. The Generating Facility must also meet all applicable codes and standards, as well as comply with the Utility Interconnection and contractual requirements.

**B.** Nothing in this process precludes the Customer and Utility from mutually agreeing to different time-frames or other procedures for the approval of interconnected operation of a Generating Facility, so long as the project progresses as agreed to by the parties. Nothing in this process precludes the Customer from starting construction prior to contacting the Utility; however, the Customer accepts the risk of potentially needing to modify or substantially change the installation.

**C.** The Less Than 1 MW Application steps are as follows:

1. Customer Submits Application. The Customer completes the Application and submits it to the Utility along with all required supplemental information and documents, which shall be noted on the Application. The Customer submits a pre-executed Interconnection Agreement along with the Application if required by the Utility.
2. Application is Received and is Complete or Incomplete. The Utility notifies the Customer within sixty (60) calendar days of receipt of the Application as to whether it is complete or incomplete.
  - a. If the Application is incomplete, the Utility will specify what additional information and/or documentation is necessary to complete the Application.
  - b. The Customer has thirty (30) calendar days after receipt of such notification to submit the required information or documentation, or the Application may be considered withdrawn.
  - c. The Customer has thirty (30) calendar days after receipt of such notification to inform the Utility as to whether or not it wishes to proceed with the project. If the Utility is not notified within the specified timeframe, the Application may be considered withdrawn.
3. Utility Reviews Application. Within sixty (60) calendar days following the receipt of a complete Application, the Utility shall review the proposed Interconnection and notify the Customer of one of the following determinations:
  - a. The proposed Generating Facility design appears to meet all Interconnection requirements and the Application is approved as submitted;
  - b. A determination that an Interconnection Study will be required pursuant to R14-2-2605(F) and in accordance with the Utility's Interconnection Manual; or

- c. The proposed Generating Facility design has failed to meet one or more of the Utility's Interconnection requirements, and the Application may be denied. The Utility shall provide an explanation of the reasons for the denial (in writing, unless otherwise requested by the Customer), and specify what additional information or modifications to the Generating Facility or Distribution System are required in order to obtain approval of the proposed design.
  - d. If the Application is denied, the Customer shall notify the Utility within thirty (30) calendar days whether or not it wishes to proceed with the project.
    - i. If the Customer does not wish to proceed with the project, or the Utility is not notified within the specified time-frame, the Application may be considered withdrawn.
    - ii. If the Customer wishes to proceed with the project, then within thirty (30) calendar days, the Customer must submit to the Utility any additional information and modifications to the Generating Facility.
- 4. Interconnection Agreement. If the Generating Facility meets all of the applicable interconnection requirements and the Application is approved, then:
  - a. The Customer then completes installation of the Generating Facility within sixty (60) calendar days after notice of approval;
  - b. The Customer will submit to the Utility a copy of the final electrical clearance for the Generating Facility issued by the authority having jurisdiction, if required; and
  - c. The Customer will submit all necessary supplemental documents as specified by the Utility.
- 5. Inspection and Testing. The Utility shall perform the site inspection and verify that the Generating Facility, as best as can be determined, is in compliance with all applicable Interconnection and code requirements. At a minimum, the Utility shall verify the following:
  - a. All Generating Facility equipment is properly labeled;
  - b. The Generating Facility system layout is in accordance with the plant location and site plans submitted to the Utility;
  - c. Inverter nameplate ratings are consistent with the information submitted to the Utility;
  - d. The Utility has unrestricted 24-hour access to the company-owned production meter and Disconnect Switch, and the Disconnect Switch meets all applicable requirements; and
  - e. The inverter shuts down as required upon simulated loss of Utility voltage.
  - f. The Utility shall communicate additional testing and startup requirements to the Customer at the Utility's discretion.

- g. The Generating Facility is wired, as best as can be determined, in accordance with the electrical diagrams submitted to the Utility.
- 6. The Utility will install appropriate metering equipment if required.
- .7. Notification. Within thirty (30) calendar days of the completion of the site inspection and the receipt of all final applicable signed Interconnection documents, the Utility shall determine whether or not the Generating Facility meets all applicable requirements, and notify the Customer that:
  - a. The Generating Facility is approved for parallel operation with the Distribution System per the agreed terms and conditions; or
  - b. The Generating Facility has failed the inspection and does not meet one or more of the applicable requirements, and the Generating Facility is not approved for parallel operation. The Utility must provide the reasons (in writing, unless otherwise requested by the Customer) for not approving parallel operation. Furthermore, the Utility has the right to take any reasonable steps (including locking open the Disconnect Switch) to prevent the Generating Facility from parallel operation. Operation of a Generating Facility in parallel without Utility approval may result in immediate termination of electric service to the Customer.
- 8. Corrections. In the event that the Generating Facility does not pass the initial Utility site inspection, the Customer must correct any outstanding issues and a re-inspection must be scheduled within thirty (30) calendar days. If the Utility is not notified within that timeframe, the Application may be withdrawn by the Utility unless alternative arrangements have been made by the Customer with the Utility.
- 9. Interconnection of Generation Facility. The installation must be interconnected within 180 calendar days of Application approval unless otherwise agreed to by the Utility. The Utility may terminate the Application and any Interconnection Agreement, in the event that this time-frame is exceeded.

**R14-2-2619. Application Process for a Generating Facility of One (1) MW and Greater**

- A. The Application process for a 1 MW and greater Generating Facility is available to Customers interconnecting an inverter-based Generating Facility that is one (1) MW or greater to the Distribution System. The inverter must meet currently applicable codes and standards, including UL 1741 listed, and must be certified to meet the shutdown protective functions (under/over voltage, under/over frequency, and anti-islanding) specified in IEEE 1547 or an equivalent standard. The

Generating Facility must also meet all applicable codes and standards, as well as comply with the Utility Interconnection and contractual requirements.

**B. The Application steps for a 1MW and Greater Generating Facility are as follows:**

1. Customer Submits Application. The Customer shall complete the Application and submit it to the Utility along with all required supplemental information, which shall be noted on the Application form. The Customer shall also submit a signed Interconnection Agreement, Operating Agreement (if required), and a Construction Agreement.
2. Utility reviews the Application and required supplemental documents.
3. A Generating Facility rated at 1 MW or greater nominal generator AC nameplate rating will require an Interconnection Study. The Interconnection Study will:
  - a. Determine whether any modifications, upgrades, or additional facilities will be required for the Distribution System, and an estimate of the associated costs will be included;
  - b. Be completed in no more than 120 days from the Study start date. If the Utility requires more than 120 days to complete the Study, the Utility shall communicate to the Customer the estimated time beyond the initial 120-day period; and
  - c. Determine any special technical requirements, the estimated cost of any related Utility upgrades, construction schedules, and other applicable schedules.
4. Utility may charge costs for performing study and any additional reviews. Utility shall provide a non-binding good faith estimate of costs for performing study. If required, the Customer shall submit a deposit for the estimated fees and/or costs before a study or any additional review will be initiated.
5. The Customer will be responsible for costs associated with upgrading the Utility's Distribution System that are necessary to interconnect the Customer's Generating Facility.

**R14-2-2621. Interconnection to a Secondary Spot Network System**

- A. The requirements for interconnecting a Generating Facility to a Secondary Spot Network System are different than those for Interconnection to radial distribution systems. In the Secondary Spot Network System, there are technical requirements to be considered particularly with the design and operational aspects of network protectors that are not required on radial systems.**
- B. The Generating Facility must meet all of the following conditions:**
1. Be less than 10 kW unless otherwise specified in the serving Utility's Interconnection Manual; and
  2. Qualify as Certified Equipment.

- C. The process for interconnecting to a Secondary Spot Network System will be determined by the Utility.

**R14-2-2622. Utility Reporting Requirements**

- A. Documentation of Projects. Each Utility shall maintain records concerning each Application received for Interconnection and parallel operation of Distributed Generation. Such records shall include the date each Application is received, documents generated in the course of processing each Application, correspondence regarding each Application, the final disposition of each Application, and the date on which the Application was approved (if approved).
- B. Annual Interconnection Report to the Commission. By March 30 of each year, each Utility shall file with the Commission a Distributed Generation Interconnection report for the preceding calendar year that lists the new Generating Facilities interconnected with the Distribution System since the previous year's report, any Distributed Generation facilities no longer interconnected with the Distribution system since the previous report, and the capacity of each Generating Facility. The annual report shall include, for the reporting period, a summary of the number of complete Applications received, the number of complete Applications approved, the number of complete Applications denied by level, and the reasons for denial. The annual report shall also include a list of special contracts, approved by the Commission during the reporting period, that provide discounted rates to consumers as an alternative to self-generation.

**R14-2-26XX. Disconnect Switch Requirements**

- A. Customer shall install and maintain a visual-open, manually operated, load break Disconnect Switch that will completely open and isolate all ungrounded conductors of Customer's Generating Facility from the Utility's Distribution System. For multi-phase systems, the Disconnect Switch shall be gang-operated. Additional requirements shall be specified by the serving Utility's Interconnection Manual.

**R14-2-26XX. Energy Storage Systems General Requirements**

- A. All Energy Storage Systems shall meet all applicable codes and standards in accordance with Section R14-2-2613 of these Interconnection Rules.
- B. These rules apply to Energy Storage Systems owned by a Customer or third party.
- C. Energy Storage Systems owned, operated and maintained by the Utility shall be installed in accordance with the Utilities Interconnection Manual and are exempt from these rules.

- D. Energy Storage Systems connecting behind a Customer's meter for the purposes of peak shaving and/or back up Customer load will follow the Application Process outlined in Section R14-2-2618 and the Utility's Interconnection Manual.
- E. Energy Storage Systems connecting directly to the Utility's Distribution System and not installed behind a Customer's meter for the purpose of providing ancillary services and/or capacity support will be subject to the Utility's Interconnection Study and Application process irrespective of AC Output rating and time frames for review.
- F. At a minimum, the following grid support features are required at the Point of Interconnection for Energy Storage Systems connecting directly to the Utility's Distribution System unless otherwise agreed to by the host Utility:
  - 1. Capability to operate in Power Factor Control ("PFC") mode at a fixed power factor within the range of plus or minus 0.95 pf at any power output level up to the maximum rated kW output of the Generating Facility.
  - 2. Capability to operate at any fixed reactive power ("kVAR") output at any power level within the full reactive power range calculated in (1) above while the Generating Facility is producing power.
  - 3. Capability to operate in Automatic Voltage Regulating ("AVR") mode to regulate the voltage to a selected voltage set point within a voltage range of 0.95 pu to 1.05 pu, to the extent that such voltage regulation can be achieved with the available reactive power calculated in Section (F1). Voltage regulation shall be within 0.50% of the voltage set point.

**R14-2-26XX. Advanced Inverter Requirements**

- A. All interconnected systems utilizing inverter based technology at the AC output range from 1kW to 10MW level shall be capable of advanced grid support features through advanced inverter functionality. These systems will be interconnected following the Application Process outlined in Section R14-2-2618 and the Utility's Interconnection Manual.
- B. Programming/setpoints shall be set in accordance with and subject to the Utility requirements and shall be monitored by the Utility.
- C. At a minimum, the following grid support features are required unless otherwise specified by the Utility's Interconnection Manual:
  - 1. Volt/Var Mode – Provide volt/var control through dynamic reactive power injection through autonomous responses to local voltage measurement
  - 2. Fixed Power Factor – Provide reactive power by a fixed power factor

3. Anti-islanding – Support anti-islanding to trip off under extended anomalous conditions
4. Low/High Voltage Ride-through (LHVRT) – Provide ride-through of low/high voltage excursions beyond normal limits
5. Low/High Frequency ride-through (LHFRT) – Provide ride-through of low/high frequency excursions beyond normal limits
6. Ramping
7. Soft-Start Reconnection – Reconnect after grid power is restored
8. Remote ON/OFF
9. Power Curtailment – 0% to 100%